



The Soda/Snack Vending Machine Policy Initiative

Background and History

In March of 2002, the Maine Bureau of Health's Oral Health Program, the Maine Dental Association, and the Maine Center for Public Health convened a meeting of interested organizations and individuals to discuss health concerns related to the consumption of soda and other non- or low-nutritive snacks among young people. The meeting was attended by 15 people with seven others expressing interest but unable to attend. By the summer of 2002, the Soda/Snack Vending Machine Policy Initiative committee had grown to 25 people with individuals representing a variety of organizations including schools, community coalitions, State-level organizations, and universities. A list of partners is included in this packet.

At the conclusion of the first meeting, the committee decided to promote policies for school vending machines that would replace nonnutritious foods and beverages with more nutritious alternatives. To accomplish this, the group would develop a model policy, identify pilot sites, evaluate the program, and then disseminate the model statewide.

Policy Development

A policy work group was formed and given the charge to draft a model policy for the larger committee to review. This work group included expertise from dietitians, dentists, hygienists, and other public health professionals.

The work group reviewed existing policies and found that the majority of the policies did not go far enough to meet the goals of the initiative. They decided to develop their own model policy that was guided by examples from the Centers for Disease Control and Prevention as well as by other national guidelines and recommendations. This policy was reviewed by the full committee and revised multiple times.

The purpose of the model policy is to be used as a guide for schools interested in passing a soda/snack vending machine policy. It is expected that the policy will be adapted to fit the needs of the community.

Packets

In order to assist pilot sites and others in the future, the committee developed packets that included fact sheets with health information based on available research and other support materials. As the pilot sites complete their work, the packets will be revised and enhanced to be as useful as possible.



The Soda/Snack Vending Machine Policy Initiative (continued)

Evaluation

As an optional benefit, Janet Whatley Blum, Ph.D., from the University of Southern Maine received a small research grant to conduct an evaluation of the project using two intervention sites and two control sites. The evaluation will look at the policy-making process, the effect on sales, as well as the impact on specific health measures for the youth impacted by the policy change.



Model School Vending Machine Policy

I. Purpose of the Policy

To improve the health of our children by promoting healthy food and beverage choices by replacing nonnutritious foods and beverages with more nutritious choices in vending machines.

II. Rationale

“When children are taught in the classroom about good nutrition and the value of healthy food choices but are surrounded by vending machines, snack bars, school stores, and a la carte sales offering low-nutrient density options, they receive the message that good nutrition is merely an academic exercise that is not supported by the school administration and is therefore not important to their health or education.” (Foods Sold in Competition with USDA School Meal Programs. U.S. Dept. of Agriculture 2001.)

The health of our children is of utmost importance to the future of our society. As great progress has been made toward understanding and treating many diseases, society is also recognizing the importance of establishing preventive health habits early in life in order to reduce the risks of developing diet-related diseases. Many chronic diseases, including heart disease, diabetes, osteoporosis, and cancer, are related to lifestyle risk factors including poor nutrition and physical inactivity.

According to the U.S. Surgeon General, overweight and obesity are at epidemic proportions. The prevalence of overweight among youth ages 6-17 years in the U.S. has more than doubled in the past 30 years; most of the increase has occurred since the late 1970s. Overweight children and adolescents are much more likely to develop Type 2 diabetes and to become overweight adults with increased risk for developing heart disease and stroke; gallbladder disease; arthritis; and endometrial, breast, prostate, and colon cancers. Left unabated, the Surgeon General states overweight and obesity may soon cause as much preventable disease and death as cigarette smoking.

As stated in Oral Health America: A Report of the U.S. Surgeon General, tooth decay continues to be the single most common chronic childhood disease. The connection between tooth decay and the consumption of foods high in sugar has long been known. Untreated oral diseases can interrupt a child’s normal development and learning. Early tooth loss caused by dental decay can result in failure to thrive, impaired speech development, absence from school, inability to concentrate in school, and a low self-esteem. Poor oral health has been related to decreased school performance, poor social relationships, and less success later in life. Children experiencing pain are distracted and unable to concentrate on schoolwork. Oral health is integral to children’s overall health and well-being.



Model School Vending Machine Policy (continued)

According to the Center for Science in the Public Interest, as teens have doubled or tripled their consumption of soft drinks, they cut their consumption of milk, an important source of calcium, by more than 40%. Few teens consume the recommended amount of calcium. Getting enough calcium in the diet during childhood, adolescence, and young adulthood is essential to reduce the risk for osteoporosis later in life. This is particularly important for females.

While many people believe that addressing nutrition-related problems is a personal responsibility, they are only partially correct. It is also a community responsibility and schools have been identified as key settings to both teach and model responsible health behavior. In the October 2001 “Call to Action to Prevent and Decrease Overweight and Obesity,” the Surgeon General of the United States specifically recommends that schools adopt policies ensuring that school environments contribute to eating patterns consistent with the *Dietary Guidelines for Americans 2000*. While often schools struggle to raise needed funds, financial considerations should be secondary to the health and well-being of our children.

III. Definitions (adapted from U.S. Food and Drug Administration Nutrition Labeling and Education Act of 1990 (NLEA))

- Juice is defined as 100 percent fruit/vegetable juice and that information must be included on the label.
- Low fat items are defined as 3 grams or less of fat per serving.
- Low saturated fat is defined as 1 gram or less of saturated fat per serving.
- Healthy food is defined as follows:
 - Must be low in fat (3 grams or less per serving) and low in saturated fat (1 gram or less per serving) and contain limited amounts of cholesterol (60 mg or less per serving) and sodium (cannot exceed 360 mg per serving).
 - Foods that are not raw fruits or vegetables must provide at least 10 percent of the daily value of one or more of the following nutrients per serving: vitamin A, vitamin C, iron, calcium, protein, and fiber. Exempt from this “10%” rule are certain raw, canned, and frozen fruits and vegetables and certain cereal-grain products.
- Water—should not contain sugar or added caffeine or other ingredients.
- Low-sugar cereal—(defined by Women, Infants, and Children’s Nutrition Program (WIC) and Child and Adult Care Food Program (CACFP)) as 6 grams of sugar or less per 100 grams of cereal.



Model School Vending Machine Policy (continued)

- Foods of minimal nutritional value—(a) in the case of artificially sweetened foods, a food which provides less than 5% of the Reference Daily Intake for each of eight specified nutrients per serving; (b) in the case of all other foods, a food which provides less than 5% of the RDI for each of eight specified nutrients per 100 calories and less than 5% of the RDI for each of eight specified nutrients per serving. The eight nutrients to be assessed for this purpose are protein, vitamin A, vitamin C, niacin, riboflavin, thiamin, calcium, and iron. Authority: 20MRSA Section 6602(5) **Note: Schools that participate in the National School Lunch Program must meet the criteria for foods of minimum nutritional value.

IV. Vending Machine Policy

In all schools within the district, only items on the sample list for school vending machines from the Centers for Disease Control and Prevention(CDC), and that meet or exceed the 5% minimum nutritional value rule (see Section III.), and water shall be sold in any school vending machine at any time of the day or evening. If items other than those on the CDC sample list are to be sold, they must first be approved by (*identify school personnel/committee assigned to this task*) and meet the definition of a healthy food.

Allowable vending machine items include:

Beverages

- Fruit juice and vegetable juice (100%)
- Low fat (1%) or skim milk
- Water

Snacks

- Canned fruit (packed in 100% juice/No sugar added)
- Fresh fruit (e.g. apples and oranges)
- Fresh vegetables (e.g. carrots)
- Low fat crackers and cookies, such as fig bars and ginger snaps
- Pretzels
- Bread products (e.g. bread sticks, rolls, bagels, and pita bread)
- Ready-to-eat, low-sugar cereals (6 grams sugar or less per 100 grams cereal)



Model School Vending Machine Policy (continued)

- Granola bars made with unsaturated fat
- Low fat or nonfat yogurt
- Snack mixes of cereal and dried fruit with a small amount of nuts and seeds* (low-sugar cereal)
- Raisins and other dried fruit* (No sugar added)
- Peanut butter and low fat crackers**

**Some schools might not want to offer these items because these foods can contribute to tooth decay.*

***Some schools might not want to offer peanut butter; although it is low in saturated fatty acids, peanut butter is high in total fat.*

Optional Sections

V. Soda “Pouring Rights” Contracts

The school shall not enter into a contract with any soda company that requires items to be sold in vending machines other than those from the Vending Machine Policy, Section IV.

VI. Food Sold during Fund-Raising Activities

To create a school environment that supports the promotion of healthy food and beverage choices for children, it is important to consider all venues where food and beverages are sold. These venues include fund-raising, fund-raising events, concession stands at sporting and other events, school stores, and a la carte meal items. The following recommendations are made to promote healthy choices for children related to fund-raising activities supported by the school.

- Offer only non-food items as the items that raise funds such as books, gift wrap, candles, plants, flowers, school promotional items, etc.
- Whenever food and beverages are sold that raise funds for the school, include food and beverage choices from the Vending Machine Policy, Section IV.
- Whenever food and beverages are offered in celebration or support of school fund-raising activities, include food and beverage choices from the Vending Machine Policy, Section IV.



Model School Vending Machine Policy (continued)

VII. Advertising

- Except as permitted in subsection (d), it shall be unlawful for any public school in this district, or any other entity or person acting on behalf of any public school in this district to:
 - Enter into a contract that grants exclusive advertising of any product or service throughout the district to a person, business, or corporation;
 - Enter into a contract or permit a school within the district to enter into a contract for products or services that requires the dissemination of advertising to pupils, including logos on facilities or informational equipment such as a scoreboard or banner with an educational message, or allow any person, corporation, or business to gather or obtain information from students for the purposes of market research.
- Contracts entered into prior to the operative date of this policy may not be renewed if they conflict with this policy.
- Nothing in this policy shall affect the ability of any public school in this district, or any other entity or person acting on behalf of any public school in this district to: (1) publicly advertise in any school newspaper, other school periodical, Web pages, or yearbook, (2) distribute advertising or market research as part of curriculum on advertising, marketing, media literacy; or, (3) post signs indicating the public's appreciation for financial or other support from any person, business, or corporation for the educational program in any school district.
- The term "advertising" means the commercial use, by any person, company, business, or corporation of any media including, but not limited to, newspaper or other printed material or flyer or circular, radio, television, video or any other electronic technology, outdoor sign, or billboard in order to transmit a message with information:
 - offering any good or service for sale, or
 - for the purpose of causing or inducing any other person to purchase any good or service, or
 - that is directed toward increasing the general demand for any good or service.



Evaluation Study of a Snack/Soda Policy in Schools

Aims of the study:

1. To examine sales and/or profits of vending machines offering only items on the sample list for school vending machines from the CDC and water versus vending machines offering other foods and beverages.
2. To examine if changing only foods and beverages offered in vending machines to only items on the sample list for school vending machines from the CDC and water will impact the diet quality of high school students.

Secondary Aims of the study:

1. To determine relationships among changes in dietary quality and other health indicators in high school students. These include body weight, bone mineral density status, oral health and physical activity levels.

Requirements of both the control & intervention school:

1. Support from administration, food service personnel, faculty, etc.
2. Information on a monthly basis (or whatever time frame is appropriate) regarding profits and specific food items sold in vending machines.
3. Ability to recruit approximately 100 volunteer students. Recruitment strategies would include presentations in PE/Health or science classes; fliers throughout the school or sent home to parents; and possible presentation to administration, faculty staff, and parents. Students willing to volunteer would need parental consent and their own assent prior to participation.
4. Access to study volunteers two times, once during the spring of 2003 and once during the spring of 2004 for measurements. Measurements would take approximately 45 to 60 minutes per volunteer and could be done before or after school or during a study hall. Subject volunteer would receive tokens (water bottle, etc.) at each measurement period.

Measurements include:

- a. Height and weight (need access scale)
- b. Completion of a food frequency questionnaire
- c. Completion of a physical activity questionnaire

Optional measurements:

- a. Asking subject to open their mouth for a trained researcher to examine their teeth
- b. Asking subject to place their hand in a DEXA machine to take an X-ray of their middle finger



Evaluation Study of a Snack/Soda Policy in Schools (continued)

Specific to the CONTROL SCHOOL:

1. Agreement not to make any changes in the current food or beverage choices of vending machines at the school for the study period (from spring of 2003 to spring of 2004).

Specific to the INTERVENTION SCHOOL:

1. Agreement to replace food and beverage choices in all school vending machines to choices that are consistent with the items on the sample list for school vending machines from the CDC and water for the 2003/2004 school year.



Soda/Snack Initiative—Partner List

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Body Weight and Sugar

Body Weight Facts

- Since 1980, obesity has doubled among adults and overweight has tripled among adolescents.
- Weight gain results from taking in too many calories from foods and drinks and not using enough calories through physical activity.
- Overweight is defined for youth as being at or above the 95th percentile for Body Mass Index (BMI) by age and sex based on reference data from the National Health and Nutrition Examination Survey.

Check your BMI at www.cdc.gov/nccdphp/dnpa/bmi/

- Overweight in youth can lead to obesity in adulthood.
- Obesity is an important risk factor for increased heart disease, diabetes, some cancers, and arthritis. Among youth, adult onset diabetes has increased tenfold in the past five years.

Maine Youth

- In 2001, 10% of Maine high school students were overweight and 15% were at risk for becoming overweight. This is similar to national rates.
- More Maine males than females were overweight (15% of males / 6% of females) and more males than females were at risk for becoming overweight (17% of males / 12% of females).

Sugar Facts

- Diets high in sugar have been associated with increased risk of obesity.
- The largest source of added sugar in the U.S. diet is regular soft drinks (33%). Other major sources of added sugar in the U.S. diet are sweets and candy (16%) and sweetened grains such as cookies and cakes (13%).
- Adolescents ages 12 to 17 get almost 40% of the added sugar in their diets from soft drinks.
- Over the past 20 years, teens have nearly tripled the amount of soda they drink.

Soft Drinks and Body Weight

- Overweight youth consumed more calories from soft drinks compared to normal weight youth. Teenaged boys consumed the greatest amount of calories from soft drinks.
- A link between the consumption of sugar-sweetened drinks and obesity has been found in teenagers.
- The National Institutes of Health recommends that people who are trying to lose or control their weight should drink water instead of soft drinks with sugar.



Bone Health and Soda

Bone Health Facts

- Osteoporosis, or porous bone, is a disease in which bones become fragile and are more likely to break. Because peak bone mass is attained by age 25, it is important that children get the calcium they need during these bone-building years.
- The beverage consumption habits of youth may lead to obesity and osteoporosis.

Building Better Bones

- **Calcium** from food becomes part of the bones' framework. The more calcium the bones contain, the stronger and more dense they will be.
- **Vitamin D** helps the body absorb calcium from food and helps deposit the mineral into your bones.
- Not taking in enough calcium & vitamin D and not doing enough weight-bearing exercise contribute to osteoporosis.

Youth and Calcium

- Between Grade 3 and Grade 8, children increase the amount of soda they drink by four times. During this same time, the amount of milk they drink goes down.
- During teen years, bones are in their most active growth phase. Nearly half of all bone is formed and about 15% of adult height is added at this time.
- Nearly 90% of teen girls and almost 70% of teen boys do not get enough calcium. On average, teens drink only one glass of milk a day.
- Today's teens have tripled the amount of soda they drink and have cut their consumption of milk by more than 40%.



Tooth Decay and Sugar

Tooth Decay Facts

- Tooth decay is the most common chronic childhood disease in the U.S.—five times more common than asthma and seven times more common than hay fever.
- An estimated 51 million hours of school are lost each year in the U.S. due to dental-related illness.
- Untreated oral diseases can interrupt a child's normal development and learning.
- There are safe and very effective ways to prevent most tooth decay.
- Diet and nutrition have a direct effect on tooth decay.

Sugar Facts

- Diets high in sugar have been identified as a major cause of tooth decay.
- The most common cause of tooth decay is the consumption of soft drinks, candy, cakes, cookies, and other sweet pastries.
- Over the past 20 years, teenagers have nearly tripled the amount of soft drinks they drink. About 40% of the sugar in their diets is from soft drinks.
- Sugar accounts for 50% of daily food intake in the average American diet.
- Small amounts of sugary foods eaten frequently during the day are the most dangerous. Each time sugar is consumed, acid that causes tooth decay is produced.

Other Important Facts

- Tooth decay is an infectious disease caused by certain types of bacteria.
- Fluoride can help prevent tooth decay by making the outer surface of teeth stronger and more resistant to the acid that causes tooth decay.
- Keeping your teeth clean by brushing and flossing daily will help to prevent tooth decay and gum disease.



Fact Sheet References

Body Weight and Sugar

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Tooth Decay and Sugar

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Joint Report of the American Dental Association Council on Access, Prevention, and Interprofessional Relations and Council on Scientific Affairs to the House of Delegates: Response Resolution 73H-2000. October 2001.



Publicity for Local Soda/Snack Initiatives

There are many ways to publicize your health messages, events, and activities. Here are ideas that will help you get your messages placed:

Local News Outlets

Develop a list of local newspapers, radio and television stations. Many libraries have media directories that include addresses, phone numbers, names of editors or producers, and circulation or broadcast information.

The local phone directory is a good resource for locating news outlets. Don't overlook community news or "free" papers, that often print upcoming community events.

Press Releases

These are bulletins that provide general information about specific topics (the role of sugar in diets, childhood obesity, dental decay), or an upcoming event such as a health fair. News articles should be typed double-spaced and if applicable on letterhead.

Good outlets for news releases include:

- Daily and weekly newspapers
- Shopping guides
- Community newsletters
- Library bulletin boards
- Health club newsletters
- Church bulletins
- Chamber of Commerce newsletters

Sample Press Releases

A sample press release highlighting a local initiative to decrease sugar consumption among youth is included in this kit as a reference.

Creating Your Own Press Release

A press release should always include the five W's: Who, What, When, Where, and Why. The spokesperson or contact name and phone number should appear in the upper right corner of the release. Date the release and include the city, state to indicate when and where the release was issued.

Double-space type and at the bottom of each page indicate if there is more copy (-more-) or if the release has ended type (# # #) at the bottom.

Check the local newspaper Web sites. Many papers accept e-mails announcing local community events.



Publicity for Local Soda/Snack Initiatives (continued)

Sample Newspaper Articles

Sample articles in this kit may be published as a public service to the community. You may wish to add quotes or information to expand on the contents in the samples.

Send a brief letter or e-mail to community affairs editors informing them about your local initiative. Explain that the news articles were prepared as a public service to the community. Follow up with a call to the editor to determine if and when the articles might be placed or whether further information is required.

Placing your school's name and the spokesperson's name in the copy will customize the attached samples. The articles may be useful when promoting school events. As an example, an article on sugar related to health can help publicize an upcoming health fair.

When sample articles are used, it is inappropriate for an individual to have the articles published under their name, implying authorship.

Announcer-Read Copy

Sample scripts are enclosed for use by local radio stations. Type the scripts on school letterhead and insert the spokesperson's name. Send the scripts to public service directors and local radio stations. **Public service announcements are broadcast without charge.** Consequently, stations schedule them at their own discretion. A letter or call to the station may give you an idea of the broadcast date.

Broadcasting

Local radio and TV programs often have talk shows, call-in programs, or special features, such as consumer interest spots. Contact the show's producer, program director, and/or host regarding your dental topics and to offer a spokesperson.

Many dental and medical societies may participate in "ask the doctor" programs on local radio stations. Begin to contact the media well in advance (two months) to make arrangements.

Copyrights

Although materials obtained from professional organizations may be camera-ready, and may be reproduced, please review the guidelines and restrictions established by the organization before any materials are duplicated.

Any specific questions should be directed to the particular organization.



Sample Press Release—modify as needed

FOR IMMEDIATE RELEASE

(Date)

FOR INFORMATION CONTACT:

(Your Spokesperson's name)

(Phone number)

Shed Some Light on Soda and Snacks

(City, State) Children who regularly drink sugary soda and eat sugary snacks are at a higher risk of becoming obese and getting tooth decay. Many diseases including heart disease, diabetes, osteoporosis, and cancer are related to lifestyle risk factors including poor nutrition and physical inactivity.

(Insert quote from local spokesperson)

Over the past 20 years, teens have nearly tripled the amount of soda they drink and have cut their consumption of milk by almost half. The average child drinks more than one can of soda every day. Boys ages 12-19 drink the most soda, more than two cans every day. Children are drinking soda and eating sugary snacks instead of healthy foods, juice, and milk.

Many sugary foods and drinks are easily available to school-aged children through vending machines in schools. Parents, health officials, and school administrators need to recognize that poor nutrition is a major health concern for children. Soda and sugary snacks should return to their former role as occasional treats.

Recommendations for change may include:

- Setting school policies that ensure students have more access to healthy drinks and snacks.
- Prohibiting soda contracts in schools.
- Eliminating school advertising and promotional events that promote unhealthy snack and beverage choices.
- Funding school and student activities so they do not have to rely on students purchasing and eating sugary foods and drinks to fund educational and extracurricular needs.

While schools often struggle to raise needed funds, financial considerations should be secondary to the health and well-being of our children.

Invest in Healthy Maine Children!

###



How to Create and Implement Policy

Lay the Groundwork

- Needs assessment:
 - Compile statistics
 - Survey
- Clarify the objective:
 - Is there another policy/program already addressing the issue?
 - Is a new policy needed or do you just need to revise an existing one?
- Review the “foundation” policies:
 - Become familiar with processes and procedures usually used to develop and pass a policy.
- Collect information:
 - Current scientific and medical findings, resource materials, and success stories.
- Write a policy proposal:
 - Write a brief description of the issues based on the information you’ve collected.
 - Identify reasons for new/revisted policy.
 - Outline several policy options from which policy-makers can choose.
- Become familiar with the political dynamics:
 - Anticipate who may be supportive and who may oppose.
- Devise an appropriate strategy to get a policy adopted/advised:
 - Seek advice on the best ways to approach policy-makers (individually or as a whole).
- Respect the hierarchy:
 - Don’t work “behind the back” of your school administrators.

Build Awareness and Support

- Involve those affected by the policy.
- Involve other youth-serving agencies (YMCA, YWCA, 4-H, Boys & Girls Clubs, recreation departments, and social service agencies).
- Involve people from a variety of community groups, business leaders, and private sector employees (Chamber of Commerce, service organizations, PTA).
- Anticipate, respond to, and involve critics:
 - Provide speaking points if necessary.
 - Consider inviting opponents to policy-making process.
- Apply communication strategies as needed:
 - Increase public awareness of the need for proposed policy.



How to Create and Implement Policy (continued)

Draft the Policy

- Officially bring the policy proposal to the attention of the decision-making body (e.g. state/local school board) for the go-ahead to proceed.
- Policy-drafting committee should consist of:
 - Family members of students.
 - Teachers & administrators.
 - School health staff, pupil services personnel, food service personnel.
 - Middle / high school students to provide a reality check.
 - *A collective bargaining agreement may require that an official of the teachers' association or school employee union be involved in the policy development process.
- Prepare an action timeline for the committee.
- Arrange for short presentations from credible experts for policy-drafting committee members to pose questions and express concerns and perspectives.
- Stay focused on the “big picture,” don't get caught up in the details.
- Draft the policy language:
 - Be clear, simple, specific, and accurate and avoid education, health, and legal jargon.
 - Be concise and brief.
 - Include a rationale for the policy, describe the benefits of adopting it.
 - Be consistent with state, district, and school visions for student learning, education reform efforts, and other current initiatives.
 - Build in accountability: cite who will be responsible for doing what and describe mechanisms for ongoing enforcement.
 - Ensure that the policy provides practical guidance to school staff members and how to address specific issues.
 - Include provisions for policy evaluation and periodic review.
- Allow time for committee members to share the draft policies with their constituencies, gather reactions, and report back to the full committee.
- Conduct public hearings or other means of gathering public input as required by the established policy-making procedures.



How to Create and Implement Policy (continued)

Adopt the Policy

- Present the final draft along with useful background information and get a well-known and respected person onto the agenda to make a persuasive case for the policy.

Administer the Policy

- Implement the policy.
- Implement a proactive communications plan to inform, educate, and build support for the policy among school staff, families and students, and the community. Stress the benefits, prepare fact sheets, talking points, and other written materials.
- Maintain the effort after the initial push for implementation.

Typical Policy Components

Authority: Who is establishing the policy; what legal authority underlies it?

Rationale: Why this policy is necessary?

Priority population: To whom does the policy apply?

Definitions: To avoid confusion, include clear explanations of major terms used.

Activities: The heart of the policy should describe how the program would be conducted, the strategy to deal with a particular situation, and the requirements that staff must follow.

Administration: Who enforces the policy and how?

Consequences: The rewards and sanctions that provide positive and negative incentives for compliance with the policy.

Evaluation: How the policy's effect will be measured and how that information will be used.

Duration: When the policy is adopted, when it takes effect, and when it expires.

Adapted from Fit, Healthy and Ready to Learn
National Association of State Boards of Education
March 2000



Liquid Candy—How Soft Drinks Are Harming Americans’ Health

Michael F. Jacobson, Ph.D.

Links :

Soft Drinks and Health

CSPI News Releases

CSPI Documents Library

Table of Contents:

Soaring Consumption of Soft Drinks

Nutritional Impact of Soft Drinks

Health Impact of Soft Drinks

Aggressive Marketing of Soft Drinks

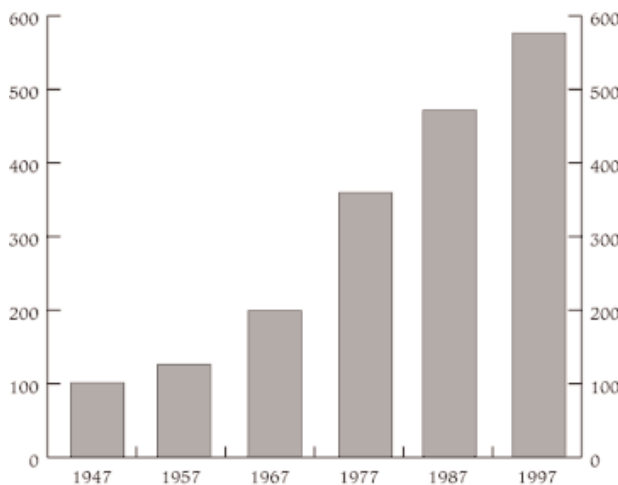
Recommendations for Action

In 1942, when production of carbonated soft drinks was about 60 12-ounce servings per person, the American Medical Association’s (AMA) Council on Foods and Nutrition stated:

From the health point of view, it is desirable especially to have restriction of such use of sugar as is represented by consumption of sweetened carbonated beverages and forms of candy which are of low nutritional value. The Council believes it would be in the interest of the public health for all practical means to be taken to limit consumption of sugar in any form in which it fails to be combined with significant proportions of other foods of high nutritive quality.¹

By 1998, soft drink production had increased by nine-fold (Figure 1) and provided more than one-third of all refined sugars in the diet, but the AMA and other medical organizations now are largely silent. This review discusses the nutritional impact and health consequences of massive consumption of soft drinks,² particularly in teenagers.

Figure 1. Annual soft drink production in the U.S. (12-ounce cans per person)



National Soft Drink Association; Beverage World



Liquid Candy—How Soft Drinks Are Harming Americans’ Health (continued)

Soaring Consumption of Soft Drinks

Carbonated soft drinks account for more than 27% of Americans’ beverage consumption.³ In 1997, Americans spent over \$54 billion to buy 14 billion gallons of soft drinks. That is equivalent to more than 576 12-ounce servings per year or 1.6 12-ounce cans per day for every man, woman, and child.⁴ That is also more than twice the amount produced in 1974. Artificially sweetened diet sodas account for 24% of sales, up from 8.6% in 1970.⁵

Table 1. Consumption of non-diet soft drinks by 12- to 19-year-olds (ounces per day) and percent of caloric intakes (all figures include nondrinkers).

Year	Ounces per day		Percent of calories	
	boys	girls	boys	girls
1977-78	7	6	3	4
1987-88	12	7	6	5
1994-96	19	12	9	8

Calculated from U.S. Department of Agriculture Nationwide Food Consumption Survey, 1977-78; Continuing Survey of Food Intakes by Individual, 1987-88, 1994-96.

Children start drinking soda pop at a remarkably young age and consumption increases through young adulthood. One fifth of one- and two-year-old children consume soft drinks.⁶ Those toddlers drink an average of seven ounces—nearly one cup—per day. Toddlers’ consumption changed little between the late 1970s and mid 1990s.

Table 2. Consumption of regular and diet soft drinks by 12- to 19-year-olds (excludes nondrinkers).

Year	Ounces per day	
	boys	girls
1977-78	16	15
1987-88	23	18
1994-96	28	21

U.S. Department of Agriculture Nationwide Food Consumption Survey, 1977-78; Continuing Survey of Food Intakes by Individual, 1987-88, 1994-96.



Liquid Candy—How Soft Drinks Are Harming Americans’ Health (continued)

Almost half of all children between 6 and 11 drink soda pop, with the average drinker consuming 15 ounces per day. That’s up slightly from 12 ounces in 1977-78.

The most avid consumers of all are 12- to 29-year-old males. Among boys 12 to 19, those who imbibe soda pop drink an average of almost 2½ 12-ounce sodas (28.5 ounces) per day. Teenage girls also drink large amounts of pop. Girls who drink soft drinks consume about 1.7 sodas per day. (Women in their twenties average slightly more: two 12-ounce sodas per day.) (See Tables 1 and 2)

In a new analysis of diet-intake data, soft drink consumption by 13- to 18-year-olds was examined (the results cannot be compared directly to the data shown for 12- to 19-year-olds because slightly different methods were used). This analysis identified how much soda pop is consumed by how many teens. For instance, one-fourth of 13- to 18-year-old male pop drinkers drink 2½ or more cans per day, and one out of 20 drinks five cans or more.⁷ (See Table 3) One-fourth of 13- to 18-year-old female pop drinkers drink about two cans or more per day, and one out of twenty drinks three cans or more.⁸ (Actual intakes may well be higher, because many survey participants tend to underestimate quantities of “bad” foods consumed.)

Table 3. Consumption of regular and diet soft drinks by 13- to 18-year olds (ounces per day; excludes nondrinkers)

	percentiles					
	5	25	50	75	90	95
1994-96; boys, 13-18	6	12	20	30	44	57
1994-96; girls, 13-18	4	6	14	23	32	40
1977-78; boys and girls	3	5	9	15	-	27

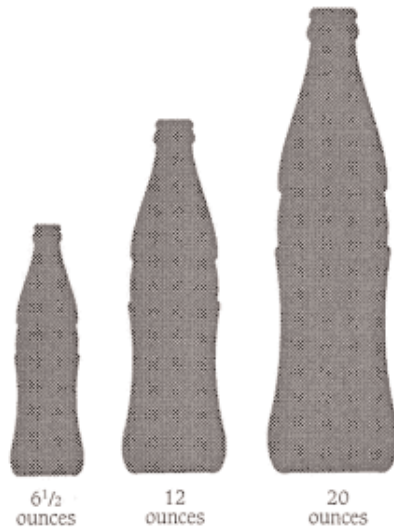
Percentile calculations by Environ, Inc.; data from USDA, CSFII, Figures for 1977-78 calculated from P.M. Guenther, Journal of the American Dietetic Association 1986;86:493-9.

By contrast, twenty years ago, the typical (50th-percentile) 13- to 18-year-old consumer of soft drinks (boys and girls together) drank ¾ of a can per day, while the 95th-percentile teen drank 2 ¼ cans. That’s slightly more than one-half of current consumption.



Liquid Candy—How Soft Drinks Are Harming Americans' Health (continued)

Figure 2. Growing size of single-serving containers



One reason, aside from the ubiquitous advertising, for increasing consumption is that the industry has steadily increased container sizes (Figure 2). In the 1950s, Coca-Cola's 6 1/2-ounce bottle was the standard serving. That grew into the 12-ounce can, and now those are being supplanted by 20-ounce bottles (and the 64-ounce Double Gulp at 7-Eleven stores). The larger the container, the more beverage people are likely to drink, especially when they assume they are buying single-serving containers.

Also, prices encourage people to drink large servings. For instance, at McDonald's restaurants a 12-ounce ("child size") drink costs 89 cents, while a drink 250% larger (42-ounce "super size") costs only 79% more (\$1.59).⁹ At Cineplex Odeon theaters, a 20-ounce ("small") drink costs \$2.50, but one 120% larger (44-ounce "large") costs only 30% more (\$3.25).¹⁰

Nutritional Impact of Soft Drinks

Regular soft drinks provide youths and young adults with hefty amounts of sugar and calories. Both regular *and* diet sodas affect Americans' intake of various minerals, vitamins, and additives.

Sugar Intake

Carbonated drinks are the single biggest source of refined sugars in the American diet.¹¹ According to dietary surveys,¹² soda pop provides the average American with seven teaspoons of sugar per day, out of a total of 20 teaspoons. Teenage boys get 44% of their 34 teaspoons of sugar a day from soft drinks. Teenage girls get 40% of their 24 teaspoons of sugar from soft drinks. Because some people drink little soda pop, the percentage of sugar provided by pop is higher among actual drinkers.



Liquid Candy—How Soft Drinks Are Harming Americans' Health (continued)

The U.S. Department of Agriculture (USDA) recommends that people eating 1,600 calories a day not eat more than six teaspoons a day of refined sugar, 12 teaspoons for those eating 2,200 calories, and 18 teaspoons for those eating 2,800 calories.^{13,14} To put those numbers into perspective, consider that the average 12- to 19-year-old boy consumes about 2,750 calories and 1 1/2 cans of soda with 15 teaspoons of sugar a day; the average girl consumes about 1,850 calories and one can with ten teaspoons of sugar. Thus, teens just about hit their recommended sugar limits from soft drinks alone. With candy, cookies, cake, ice cream, and other sugary foods, most exceed those recommendations by a large margin.

Calorie Intake

Lots of soda pop means lots of sugar means lots of calories. Soft drinks are the fifth largest source of calories for adults.¹⁵ They provide 5.6% of all the calories that Americans consume.¹⁶ In 12- to 19-year-olds, soft drinks provide 9% of boys' calories and 8% of girls' calories.¹⁷ Those percentages are triple (boys) or double (girls) what they were in 1977-78. (See Table 1) Those figures include teens who consumed little or no soda pop.

For the average 13- to 18-year-old boy or girl soda drinker, soft drinks provide about 9% of calories. Boys and girls in the 75th percentile of consumption obtained 12% of their calories from soft drinks, and those in the 90th percentile about 18% of their calories.

Nutrient Intakes

Many nutritionists state that soft drinks and other calorie-rich, nutrient-poor foods can fit into a good diet. In theory, they are correct, but, regrettably, they ignore the fact that most Americans consume great quantities of soft drinks and meager quantities of healthful foods. One government study found that only 2% of 2- to 19-year-olds met all five federal recommendations for a healthy diet.¹⁸ USDA's Healthy Eating Index found that on a scale of 0-100, teenagers had scores in the low 60s (as did most other age-sex groups). Scores between 51 and 80 indicate that a diet "needs improvement."¹⁹

Dietary surveys of teenagers found that in 1996:

- Only 34% of boys and 33% of girls consumed the number of servings of vegetables recommended by USDA's Food Pyramid.
- Only 11% of boys and 16% of girls consumed the recommended amount of fruit.
- Only 29% of boys and 10% of girls consumed the recommended amount of dairy foods.
- Most boys and girls did not meet the recommended amounts of grain and protein foods.



Liquid Candy—How Soft Drinks Are Harming Americans’ Health (continued)

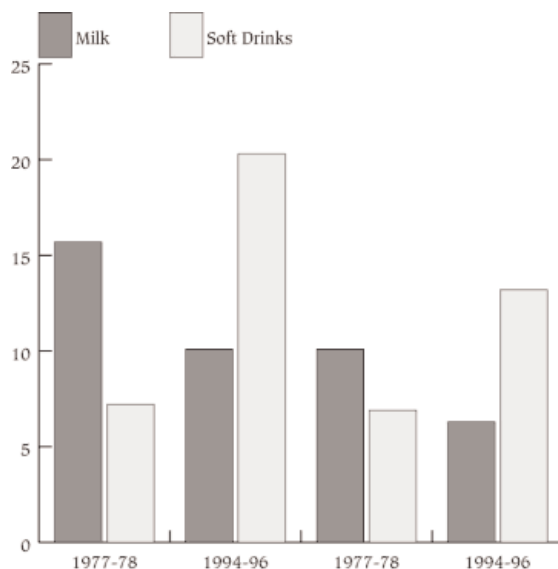
Those surveys also found that few 12- to 19-year-olds consumed recommended amounts of certain nutrients, including:

- calcium: only 36% of boys and 14% of girls consumed 100% of the Recommended Dietary Allowance (RDA).
- vitamin A: only 36% of boys and 31% of girls consumed 100% of the RDA.
- magnesium: only 34% of boys and 18% of girls consumed 100% of the RDA.

As teens have doubled or tripled their consumption of soft drinks, they cut their consumption of milk by more than 40%. Twenty years ago, boys consumed more than twice as much milk as soft drinks, and girls consumed 50% more milk than soft drinks (Figure 3). By 1994-96, both boys and girls consumed twice as much soda pop as milk (and 20- to 29-year-olds consumed three times as much). Teenage boys consumed about 2 2/3 cups of carbonated soft drinks per day but only 1 1/4 cups of fluid milk. Girls consumed about 1 1/2 cups per day of soft drinks, but less than 1 cup of milk. Compared to adolescent nonconsumers, heavy drinkers of soda pop (26 ounces per day or more) are almost four times more likely to drink less than one glass of milk a day.²⁰

In 1977-78, teenage boys and girls who frequently drank soft drinks consumed about 20% less calcium than nonconsumers. Heavy soft-drink consumption also correlated with low intake of magnesium, ascorbic acid, riboflavin, and vitamin A, as well as high intake of calories, fat, and carbohydrates.²¹ In 1994-96, calcium continued to be a special problem for female soft drink consumers.²²

Figure 3. Teens’ (ages 12-19) consumption of milk and soft drinks (ounces per day).



USDA: NFCS, CSFII



Liquid Candy—How Soft Drinks Are Harming Americans' Health (continued)

Health Impact of Soft Drinks

The soft drink industry has consistently portrayed its products as being positively healthful, saying they are 90% water and contain sugars found in nature. A poster that the National Soft Drink Association has provided to teachers states:

As refreshing sources of needed liquids and energy, soft drinks represent a positive addition to a well-balanced diet. These same three sugars also occur naturally, for example, in fruits. In your body, it makes no difference whether the sugar is from a soft drink or a peach.²³

M. Douglas Ivester, Coca-Cola's chairman and CEO, defending marketing in Africa, said, "Actually, our product is quite healthy. Fluid replenishment is a key to health....Coca-Cola does a great service because it encourages people to take in more and more liquids."²⁴

In fact, soft drinks pose health risks both because of what they contain (for example, sugar and various additives) and what they replace in the diet (beverages and foods that provide vitamins, minerals, and other nutrients).

Obesity

Obesity increases the risk of diabetes and cardiovascular disease and causes severe social and psychological problems in millions of Americans. Between 1971-74 and 1988-94, obesity rates in teenage boys soared from 5% to 12% and in teenage girls from 7% to 11%. Among adults, between 1976-80 and 1988-94, the rate of obesity jumped by one-third, from 25% to 35%.²⁵

Numerous factors—from lack of exercise to eating too many calories to genetics—contribute to obesity. Soda pop adds unnecessary, nonnutritious calories to the diet, though it has not been possible to prove that it (or any other individual food) is responsible for the excess calories that lead to obesity. However, one recent study found that soft drinks provide more calories to overweight youths than to other youths. The difference was most striking among teenage boys: Soda pop provides 10.3% of the calories consumed by overweight boys, but only 7.6% of calories consumed by other boys. There was no consistent pattern of differences with regard to intake of calories, fat, or several other factors.²⁶

Obesity rates have risen in tandem with soft drink consumption and heavy consumers of soda pop have higher calorie intakes.²⁷ While those observations do not prove that sugary soft drinks cause obesity (heavy consumers may exercise more and need more calories), heavy consumption is likely to contribute to weight gain in many consumers.

Regardless of whether soda pop (or sugar) contributes to weight gain, nutritionists and weight loss experts routinely advise overweight individuals to consume fewer calories—starting with



Liquid Candy—How Soft Drinks Are Harming Americans' Health (continued)

empty-calorie foods such as soft drinks. The National Institutes of Health recommends that people who are trying to lose or control their weight should drink water instead of soft drinks with sugar.²⁸

Bones and Osteoporosis

People who drink soft drinks instead of milk or other dairy products likely will have lower calcium intakes. Low calcium intake contributes to osteoporosis, a disease leading to fragile and broken bones.²⁹ Currently, 10 million Americans have osteoporosis. Another 18 million have low bone mass and are at increased risk of osteoporosis. Women are more frequently affected than men. Considering the low calcium intake of today's teenage girls, osteoporosis rates may well rise.

The risk of osteoporosis depends in part on how much bone mass is built early in life. Girls build 92% of their bone mass by age 18,³⁰ but if they don't consume enough calcium in their teenage years they cannot "catch up" later. That is why experts recommend higher calcium intakes for youths 9 to 18 than for adults 19 to 50. Currently, teenage girls are consuming only 60% of the recommended amount, with soft drink drinkers consuming almost one-fifth less than nonconsumers.³¹

While osteoporosis takes decades to develop, preliminary research suggests that drinking soda pop instead of milk can contribute to broken bones in children. One study found that children 3 to 15 years old who had suffered broken bones had lower bone density, which can result from low calcium intake.³²

Tooth Decay

Refined sugar is one of several important factors that promote tooth decay (dental caries). Regular soft drinks promote decay because they bathe the teeth of frequent consumers in sugar water for long periods of time during the day. An analysis of data from 1971-74 found a strong correlation between the frequency of between-meal consumption of soda pop and dental caries.³³ (Those researchers considered other sugary foods in the diet and other variables.) Soft drinks appear to cause decay in certain surfaces of certain teeth more than in others.³⁴

Tooth decay rates have declined considerably in recent decades, thanks to such preventive factors as fluoride-containing toothpaste, fluoridated water, tooth sealants, and others. Nevertheless, caries remains a problem for some people. A large survey in California found that children (ages 6 to 8) of less-educated parents have 20% higher rates of decayed and filled teeth.³⁵ A national study found that African-American and Mexican-American children (6 to 18 years old) are about twice as likely to have untreated caries as their white counterparts.³⁶ For people in high-risk groups, prevention is particularly important.



Liquid Candy—How Soft Drinks Are Harming Americans' Health (continued)

To prevent tooth decay, even the Canadian Soft Drink Association recommends limiting between-meal snacking of sugary and starchy foods, avoiding prolonged sugar levels in the mouth, and eating sugary foods and beverages with meals. Unfortunately, many heavy drinkers of soft drinks violate each of those precepts.

Heart Disease

Heart disease is the nation's number-one killer. Some of the most important causes are diets high in saturated and trans fat and cholesterol, cigarette smoking, and a sedentary lifestyle. In addition, in many adults a diet high in sugar may also promote heart disease.

High-sugar diets may contribute to heart disease in people who are "insulin resistant." Those people, an estimated one-fourth of adults, frequently have high levels of triglycerides and low levels of HDL ("good") cholesterol in their blood. When they eat a diet high in carbohydrates, their triglyceride and insulin levels rise. Sugar has a greater effect than other carbohydrates.³⁷ The high triglyceride levels are associated with a higher risk of heart disease.³⁸ It would make sense for insulin-resistant people, in particular, to consume low levels of regular soft drinks and other sugary foods. Research is needed on insulin resistance in adolescents.

Kidney Stones

Kidney (urinary) stones are one of the most painful disorders to afflict humans and one of the most common disorders of the urinary tract. According to the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), a unit of the National Institutes of Health, more than one million cases of kidney stones were diagnosed in 1985.³⁹ NIDDK estimates that 10% of all Americans will have a kidney stone during their lifetime. Several times more men, frequently between the ages of 20 and 40, are affected than women. Young men are also the heaviest consumers of soft drinks.

After a study suggested a link between soft drinks and kidney stones, researchers conducted an intervention trial.⁴⁰ That trial involved 1,009 men who had suffered kidney stones and drank at least five 1/3 ounces of soda pop per day. Half the men were asked to refrain from drinking pop, while the others were not asked. Over the next three years, drinkers of Coca-Cola and other cola beverages acidified only with phosphoric acid who reduced their consumption (to less than half their customary levels) were almost one-third less likely to experience recurrence of stones. Among those who usually drank soft drinks acidified with citric acid (with or without phosphoric acid), drinking less had no effect. While more research needs to be done on the cola-stone connection, the NIDDK includes cola beverages on a list of foods that doctors may advise patients to avoid.



Liquid Candy—How Soft Drinks Are Harming Americans' Health (continued)

Additives: Psychoactive Drug, Allergens, and More

Several additives in soft drinks raise health concerns. Caffeine, a mildly addictive stimulant drug, is present in most cola and “pepper” drinks, as well as some orange sodas and other products. Caffeine’s addictiveness may be one reason why six of the seven most popular soft drinks contain caffeine.⁴¹ Caffeine-free colas are available, but account for only about 5% of colas made by Coca-Cola and Pepsi-Cola.⁴² On the other hand, Coca-Cola and other companies have begun marketing soft drinks, such as Surge, Josta, and Jolt, with 30% to 60% more caffeine than Coke and Pepsi.

In 1994-96, the average 13- to 18-year-old boy who drank soft drinks consumed about 1 2/3 cans per day. Those drinking Mountain Dew would have ingested 92 mg of caffeine from that source (55 mg caffeine/12 ounces). That is equivalent to about one six-ounce cup of brewed coffee. Boys in the 90th-percentile of soft drink consumption consume as much caffeine as is in two cups of coffee; for girls the figure is 1 1/2 cups of coffee.

One problem with caffeine is that it increases the excretion of calcium in urine.⁴³ Drinking 12 ounces of caffeine-containing soft drink causes the loss of about 20 milligrams of calcium, or two percent of the U.S. RDA (or Daily Value). That loss, compounded by the relatively low calcium intake in girls who are heavy consumers of soda pop, may increase the risk of osteoporosis.

Caffeine can cause nervousness, irritability, sleeplessness, and rapid heart beat.⁴⁴ Caffeine causes children who normally do not consume much caffeine to be restless and fidgety, develop headaches, and have difficulty going to sleep.⁴⁵ Also, caffeine’s addictiveness may keep people hooked on soft drinks (or other caffeine-containing beverages). One reflection of the drug’s addictiveness is that when children ages six to 12 stop consuming caffeine, they suffer withdrawal symptoms that impair their attention span and performance.⁴⁶

Several additives used in soft drinks cause occasional allergic reactions. Yellow 5 dye causes asthma, hives, and a runny nose.⁴⁷ A natural red coloring, cochineal (and its close relative carmine), causes life-threatening reactions.⁴⁸ Dyes can cause hyperactivity in sensitive children.⁴⁹

In diet sodas, artificial sweeteners may raise concerns. Saccharin, which has been replaced by aspartame in all but a few brands, has been linked in human studies to urinary bladder cancer and in animal studies to cancers of the bladder and other organs.⁵⁰ Congress has required products made with saccharin to bear a warning label. The safety of acesulfame-K, which was approved in 1998 for use in soft drinks, has been questioned by several cancer experts.⁵¹ Also, aspartame should be better tested.



Liquid Candy—How Soft Drinks Are Harming Americans’ Health (continued)

Aggressive Marketing of Soft Drinks

Soft drink companies are among the most aggressive marketers in the world. They have used advertising and many other techniques to increase sales.

Soft drink advertising budgets dwarf all advertising and public service campaigns promoting the consumption of fruits, vegetables, healthful diets, and low fat milk. In 1997, Coca-Cola, which accounts for 44%⁵² of the soft drink market in the U.S., spent \$277 million on advertising and the four major companies spent \$631 million. Between 1986 and 1997 those companies spent \$6.8 billion on advertising.⁵³

Companies make sure their products are always readily accessible. Thus, in 1997, 2.8 million soft drink vending machines dispensed 27 billion drinks worth \$17.5 billion.⁵⁴ Coca-Cola’s soft drinks are sold at two million stores, more than 450,000 restaurants, and in 1.4 million vending machines and coolers.⁵⁵

Table 4. Beverage prices

Beverage	Cost	Cost per quart (¢)
Cola (supermarket brand)	\$.59/2 liters	28
Coca-Cola	\$.69/2 liters	33
Pepsi-Cola	\$.99/6 12-oz. cans \$3.99/24 12-oz. cans	44
Bottled water (supermarket brand)	\$.79/gallon	20
Bottled spring water (supermarket brand)	\$.89/gallon	22
Seltzer water, club soda (supermarket brand)	\$.89/2 liters	42
Milk	\$2.79/gallon \$.95/quart	70 95
Orange juice, frozen (supermarket brand)	\$1.39/12-oz. can	93

Prices at Washington-area supermarkets, September, 1998.

The major companies target children aggressively (though, to their credit, they have not gone after 4-year-olds by advertising on Saturday morning television). Pepsi advertises on Channel One, a daily news program shown in 12,000 schools.⁵⁶ Companies inculcate brand loyalties in children and boost consumption by paying school districts and others for exclusive marketing



Liquid Candy—How Soft Drinks Are Harming Americans' Health (continued)

agreements. For instance, Dr. Pepper paid the Grapevine-Colleyville, Texas, School District \$3.45 million for a ten-year contract (it includes rooftop advertising to reach passengers in planes landing at the nearby Dallas/Ft. Worth Airport).⁵⁷ To reach youths after school, Coca-Cola is paying \$60 million over ten years to the Boys & Girls Clubs of America for exclusive marketing rights in more than 2,000 clubs.⁵⁸

In one of the most despicable marketing gambits, Pepsi, Dr. Pepper, and Seven-Up encourage feeding soft drinks to babies by licensing their logos to a major maker of baby bottles, Munchkin Bottling, Inc. Infants and toddlers are four times likelier to be fed soda pop out of those bottles than out of regular baby bottles.⁵⁹

Also fueling soft drink sales is the low cost of the sugar water-additive products. (See Table 4) Supermarket brands are particularly cheap, easily getting as low as 28 cents per quart, but even Coca-Cola and Pepsi-Cola are available for 33 cents per quart when on special. Milk costs two to three times as much, about 70 to 95 cents per quart.

Moreover, in recent years, inflation has had a greater effect on the price of milk than of soft drinks. Between 1982-84 and 1997 the Consumer Price Index rose 2.3 times as much for milk as for soft drinks.⁶⁰

The soft drink industry is aiming for continued expansion in coming years. Thus, the president of Coca-Cola bemoans the fact that his company accounts for only 1 billion out of the 47 billion servings of all beverages that earthlings consume daily.⁶¹ The company's goal is to: make Coca-Cola the preferred drink for any occasion, whether it's a simple family supper or a formal state dinner. To build pervasiveness of our products, we're putting ice-cold Coca-Cola classic and our other brands within reach, wherever you look: at the supermarket, the video store, the soccer field, the gas station—everywhere.⁶²

Recommendations for Action

In part because of powerful advertising, universal availability, and low price, and in part because of disinterest on the part of many nutritionists and other health professionals, Americans have come to consider soft drinks a routine snack and a standard, appropriate part of meals instead of an occasional treat, as they were treated several decades ago. Moreover, many of today's younger parents grew up with soft drinks, see their routine consumption as normal, and so make little effort to restrict their children's consumption of them.

It is a fact, though, that soft drinks provide enormous amounts of sugar and calories to a nation that does not meet national dietary goals and that is experiencing an epidemic of obesity. The



Liquid Candy—How Soft Drinks Are Harming Americans' Health (continued)

replacement of milk by soft drinks in teenage girls' diets portends continuing high rates of osteoporosis. Soft drinks may also contribute to dental problems, kidney stones, and heart disease. Additives may cause insomnia, behavioral problems, and allergic reactions and may increase slightly the risk of cancer.

The industry promises that it will be doing everything possible to persuade even more Americans to drink even more soda pop even more often. Parents and health officials need to recognize soft drinks for what they are—liquid candy—and do everything possible to return those beverages to their former, reasonable role as an occasional treat.

- Individuals and families should consider how much soda pop they are drinking and reduce consumption accordingly. Parents should stock their homes with healthful foods and beverages that family members enjoy.
- Physicians, nurses, and nutritionists routinely should ask their patients how much soda pop they are drinking and advise them, if appropriate, of dietary changes to make.
- Organizations concerned about women's and children's health, dental and bone health, and heart disease should collaborate on campaigns to reduce soft drink consumption.
- Local, State, and Federal governments should be as aggressive in providing water fountains in public buildings and spaces as the industry is in placing vending machines everywhere.
- State and local governments should considering taxing soft drinks, as Arkansas, Tennessee, Washington, and West Virginia already do. Arkansas raised \$40 million in fiscal year 1998 from that tax.⁶³ If all states taxed soft drinks at Arkansas' rate (2 cents per 12-ounce can), they could raise \$3 billion annually. Those revenues could fund campaigns to improve diets, build exercise facilities (bike paths, swimming pools, etc.), and support physical education programs in schools.
- Local governments could require calorie listings on menu boards at fast-food outlets and on vending machines to sensitize consumers to the nutritional "cost" of sugared soft drinks and other foods.
- School systems and other organizations catering to children should stop selling soft drinks, candy, and similar foods in hallways, shops, and cafeterias.
- School systems and youth organizations should not auction themselves off to the highest bidder for exclusive soft drink marketing rights. Those deals profit the companies and schools at the expense of the students' health.
- The National Academy of Sciences or the Surgeon General should review the impact of current and projected levels of soft drink (and sugar) consumption on public health.



Liquid Candy—How Soft Drinks Are Harming Americans' Health (continued)

- Soft drink companies voluntarily should not advertise to children and adolescents. Labels should advise parents that soft drinks may replace low fat milk, fruit juice, and other healthy foods in the diets of children and adolescents.
- Scientific research should explore the role of heavy consumption of soft drinks (and sugar) in nutritional status, obesity, caries, kidney stones, osteoporosis, and heart disease.

Endnotes

1. *JAMA*. 1942;120:763-5.
2. This review does not cover sweetened non-carbonated beverages (bottled ice teas, fruit drinks and ades, bottled ice tea, etc.).
3. National Soft Drink Assoc. Web site, www.nsd.org.
4. *Ibid.*
5. USDA/ERS: *Food Consumption, Prices, and Expenditures, 1970-95*, Stat. Bull. No. 939 (August, 1997).
6. Unless otherwise specified, all data on consumption of soft drinks, milk, and calorie intake were obtained or calculated from U.S. Department of Agriculture (USDA) surveys (one-day data) particularly Continuing Survey of Food Intakes of Individuals (CSFII), 1994-96 (Data Tables 9.4, 9.7, 10.4, 10.7); 1987-88 (Report No. 87+1, Tables 1.2-1 and -2; 1.7-1 and -2); Nationwide Food Consumption Surveys, 1977-78 (Tables A1.2-1 and -2; A1.7-1 and -2). Intake of added sugars by age was obtained from USDA's analysis for purposes of the Food Guide Pyramid (two-day 1996 data, Table 6). Teens' consumption of vegetables, fruit, and other foods also is from Pyramid Servings Data, USDA, Dec. 1997, based on CSFII, 1996. We are grateful to USDA staff members in the Food Surveys Research Group for their assistance. (See USDA Web site: www.barc.usda.gov/bhnrc/foodsurvey/home.htm)
7. Analyses by Environ, Inc., Sept. 1998, based on USDA CSFII 1994-96 two-day data.
8. *Ibid.*
9. CSPI survey, August 26, 1998.
10. *Nutrition Action Healthletter*. 1998 (July/Aug.);25(6):6.
11. *Am. J. Clin. Nutr.* 1995;62(suppl):178S-94S.
12. Those dietary surveys find that consumers report consuming only 57% of all soft drinks produced. While some soft drinks are wasted or returned to manufacturers, that fact provides good evidence that the surveys greatly underestimate actual intake.
13. U.S. Dept. Agr. *The Food Guide Pyramid*. Home and Garden Bulletin No. 252, Oct. 1996, p. 17.
14. USDA's recommendation applies to diets that include 30% of calories from fat. Because 33% of the calories teens consume come from fat, there is even less room in the diet for added sugar.
15. *J. Am. Diet Assoc.* 1998;98:537-547.
16. USDA CSFII 1994-96.
17. Diet sodas, which provide no calories, constitute only 4% of soft drink consumption by teenage boys and 11% by teenage girls.
18. *Pediatrics*. 1997;100:323-9. *Pediatrics*. 1998;101:952-3.
19. USDA, Center for Nutrition Policy and Promotion, CNPP-5; The Healthy Eating Index, 1994-96, July 1998.
20. Personal communication, Lisa Harnack, Sept. 22, 1998.
21. *Journal of the American Dietetic Association* 1986;86:493-9.
22. Analyses by Environ, Inc., see note 7. Calcium was the only micronutrient examined.
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