

Ephedra and Energy Drinks on College Campuses

by Daniel Ari Kapner

The February 2003 death of Baltimore Orioles pitcher Steve Bechler, who according to the coroner's report died after taking ephedrine alkaloids (ephedra), has garnered national attention for the topic of nutritional supplements and energy drinks.¹ While the headlines have focused mainly on use by professional athletes, these substances have gained popularity among college-age students and are associated with the deaths of Florida State University linebacker Devaughn Darling, Northwestern University football player Rashid Wheeler, and the University at Albany, SUNY, football player Peter Schlendorf.^{1, 2, 3}

Energy drinks and energy-enhancing pills, diet aids, muscle-enlargers, and other supplements fall under the 1994 Dietary Supplement Health and Education Act, which states that products deriving from herbs and natural sources are classified as food, rather than as drugs.⁴ These legal substances, which produce appealing, steroid-like effects, are marketed heavily to college-age athletes, club-goers, dancers, and partyers. The energy drink and herbal industry's vast marketing presence has created an environment where students understand little about these products' adverse effects.^{4, 5}

This *Infofacts/Resources* describes the use of ephedra and energy drinks on college campuses, possible effects of their use, and recommendations for institutions of higher education.

EPHEDRA

The U.S. Food and Drug Administration (FDA) banned ephedra as an energy enhancer and diet aid in April 2004. Before being banned, ephedra was marketed largely to college athletes to increase "strength, dynamic power, energy . . . endurance

levels . . . alertness and perception."^{6, 7} Also known as ma huang, ephedra is considered a "natural" supplement⁷ and Chinese herbalists have used the herb Ephedra for thousands of years to treat asthma and colds.⁸ Ephedra has been used in some over-the-counter cold and asthma products in the United States.⁹

Until recently, ephedra was found in many weight-loss and energy-enhancing products. Popular supplements that contained ephedra included Metabolife and Ripped Fuel, both of which are now available in ephedra-free formulations. As recently as 2008, one Internet bodybuilding retail site listed 36 products that included ephedra.⁶ Ephedra was the primary ingredient in herbal ecstasy, commonly sold on the Internet.¹⁰

Herbal companies often misinform consumers about the actual ingredients and dosages in their products.¹⁰ Incorrect labeling may be more widespread than consumers realize. For instance, the American Council on Science and Health (ACSH) reported that one product, "wild Chinese ginseng," lists ginseng as its only ingredient, yet ACSH laboratories also found caffeine and 45 milligrams of ephedra in each tablet.¹⁰

Adverse Effects of Ephedra

Ephedra can induce headaches, insomnia, tremors, nerve damage, rapid or irregular heartbeat, high blood pressure, hypertension, strokes, heart attacks, seizures, brain damage, and death.^{11, 12} The FDA received more than 1,500 reports of adverse reactions from ephedra prior to September 2001.¹³

According to a RAND Corporation 2003 study of adverse reactions, ephedra was linked to five deaths, five heart attacks, 11 strokes, four seizures, and eight psychiatric events in those cases where records were complete and no other contributing factors were

found. Half of the events in which ephedra was the main contributing factor affected apparently healthy people under age 30.¹³

The *Annals of Internal Medicine* published a study in 2003 suggesting that ephedra accounted for 64 percent of all adverse reactions from herbal products in 2001, even though it represented only 4.3 percent of industry sales in that year.^{14, 15}

A study published in the *New England Journal of Medicine* in 2000 examined 140 cases of ephedra-related health incidents. They concluded that 43 cases (almost 31 percent) were "definitely" or "probably" ephedra-related; in these cases, three people died, seven became permanently disabled, and four required continuing medical treatment. Another 44 cases were "possibly" related to ephedra-containing products.^{5, 12}

Regulating Ephedra

After Baltimore Orioles pitcher Steve Bechler died, the FDA ordered herbal companies to print warning labels on ephedra-containing products.¹⁶ The FDA first proposed limits on ephedra in 1997 due to reports of negative health effects, which began a years-long process ultimately resulting in the 2004 FDA rule to prohibit the sale of ephedra. Unlike medications, which pharmaceutical companies must prove safe and efficacious before marketing, ephedra was protected under the 1994 Dietary Supplement Health and Education Act (DSHEA) as a food rather than a drug. This classification meant that to ban the substance, the FDA had to bear the burden of proving that ephedra presents "an unreasonable risk to those who use it."¹⁷

In December 2003, the FDA announced that it would ban the sale of all dietary supplements containing ephedra, effective April 12, 2004. At the time of the announcement, the FDA warned 62 companies that make or sell ephedra-containing supplements to stop manufacturing and marketing the products as soon as possible. This landmark ruling was the first time since the DSHEA was passed that the FDA had taken action to outlaw the sale of a supplement.

The FDA ruling states that use of ephedra supplements has little positive effect aside from short-term weight loss.¹⁷ Tommy G. Thompson, Secretary of

For additional information

Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention

Education Development Center, Inc.
55 Chapel Street
Newton, Massachusetts 02458-1060

<http://www.higheredcenter.org>
1-800-676-1730; TDD Relay-friendly, Dial 711
HigherEdCtr@edc.org • Fax: 617-928-1537

Funded by the U.S. Department of Education

August 2008



Health and Human Services, declared that supplements containing ephedra “pose unacceptable health risks, and any consumers who are still using them should stop immediately.”¹⁸ Moreover, referring to research by the National Institutes of Health, the FDA reported that ephedra is associated with heart palpitations, psychiatric effects, tremors, insomnia, and upper gastrointestinal effects, especially when use is combined with caffeine or other stimulants.¹⁷

If manufacturers continue to market ephedra-containing supplements, the FDA can prohibit the products from being sold or take action to remove the supplements from the market. Some ephedra-containing products are not affected by the ban, including traditional Chinese herbal medicines, herbal teas, and medications that contain chemically synthesized ephedra as an ingredient.¹⁷

Even before the FDA’s ban on sales of ephedra supplements, three states had banned ephedra dietary supplements. Illinois passed legislation in May 2003, following the death of a 16-year old football player who had a heart attack and died after using ephedra.¹⁹ New York became the second state to ban ephedra, passing a bill in June 2003.²⁰ The California State Senate approved a ban in May 2003.²¹

Prior to the FDA ban, sports organizations realized the adverse effects of ephedra. The National Collegiate Athletic Association (NCAA), the International Olympic Committee, and NASCAR banned the use of ephedra by competitors prior to its nationwide ban.^{22, 23} In October 2001, the National Football League became the first professional athletics organization to ban it, following the death of Corey Stringer from the Minnesota Vikings.²⁴ Major League Baseball, the National Hockey League, and the National Basketball Association warned against using ephedra; none of these organizations had banned it or tested for drug use.²⁵ In an investigation of ephedra-containing supplements, the U.S. House of Representatives Energy and Commerce Committee wrote to major professional sports leagues in spring 2003 requesting information about their policies concerning the use of ephedra by athletes in their leagues.²⁶

Ephedra and Students

According to an NCAA survey of more than 500 campus athletics programs, only 48.7 percent test their student athletes for drugs, and fewer than half of these programs test for ephedra.²⁷ Interestingly, nearly two-thirds of student athletes believe that the NCAA should drug test student athletes, though fewer believe that imposing team penalties for individual positive tests would be fair and appropriate.²⁸

A 2006 NCAA report indicates that 2.5 percent of college athletes used ephedrine, and that over two-thirds

of ephedrine use now appears to start prior to college.²⁸ Use of ephedrine among student athletes has remained stable since it was first measured in 1997.²⁹ Ice hockey athletes report among the highest rates of ephedra use, with 12 percent of female athletes and over 5 percent of male athletes reporting use.²⁹ Water polo had the most male ephedrine users in 2005, at 7.9 percent.²⁸

ENERGY DRINKS

Energy drinks are beverages loaded with caffeine, sugar, and other ingredients such as ginseng, taurine, guarana, and B-complex vitamins.^{29, 30} Before the FDA ban, energy drinks very popular on campus, such as Extreme Ripped Force, 4m energizer, and Xtreme NRG, contained ephedra.^{31, 32} Extreme Ripped Force contained 25 milligrams of ephedra, more than three times the limit the FDA recommended in 1997.^{29, 30} One energy drink, Hansen Beverage Company’s Hard E, contains 5 percent alcohol.³³ With the recent FDA ruling banning ephedra in supplements, many of the manufacturers of ephedra-containing energy drinks introduced ephedra-free alternatives.²⁹

Energy drinks are marketed to students, athletes, and active individuals between the ages of 21 and 35. Often taken after exercise or mixed with vodka, energy drinks are promoted at nightclubs, bars, universities, concerts, and other events that attract students.^{9, 34} One energy drink, Amp, held promotions at nearly 30 university events in Boston during the fall of 2001.³⁵ These beverages advertise a wide range of unverified, yet appealing effects. For example, Red Bull, another energy drink, publicizes increased “physical endurance . . . reaction speed and concentration . . . mental alertness (stay awake) . . . overall feeling of well-being . . . metabolism [and] stamina.”³⁶

A 2006 survey of 4,271 college students revealed that 24 percent of past-30-day drinkers consumed alcohol mixed with energy drinks.³⁷ In a 2007 survey of 496 students, 51 percent reported consuming more than one energy drink each month in an average month for the current semester.³⁸

The beverage industry views energy drinks as a growth market. Red Bull, originating in Austria, controls nearly half of the energy drink market in the United States, with 700 million cans sold in the United States in 2004.³⁹ The number of energy drink companies continues to grow. Other brands include Monster, Rockstar, Adrenaline Rush, Atomic Energy, Hansen’s Hard E, Jones’ Whoop Ass, KMX, Niagra, Power House, SoBe, and Virgin Hi Energy.

Major corporations such as Pepsico, Coca-Cola, Anheuser Busch, Miller Brewing Company and Cadbury Schweppes all produce their own energy drinks.

Some energy drinks are now being produced with alcohol mixed in, and critics claim these drinks are being marketed to underage and vulnerable youth. In 2008, Anheuser Busch responded to threats of litigation from the Center for Science in the Public Interest and an investigation by 11 state attorneys general by agreeing to stop producing and marketing caffeinated alcoholic beverages such as Bud Extra and Tilt.⁴⁰

Adverse Effects

Energy drinks can become dangerous when consumed in large quantities, taken after exercise or mixed with alcohol.^{9, 41} Adverse effects include dehydration, insomnia, headaches, nervousness, nosebleeds, and vomiting. Reports claim that energy drinks have caused even more severe reactions, such as seizure, heart arrhythmia, and death.^{9, 42} In a 2006 survey, college students reported a significantly higher prevalence of alcohol-related consequences when combining energy drinks, even after adjusting for the amount of alcohol consumed. These consequences included being taken advantage of sexually, riding with an intoxicated driver, and being physically hurt or injured.³⁷ The stimulating effect of energy drinks is deceiving, causing people to feel less intoxicated than they actually are and making it harder for bartenders to determine whether their patrons should no longer be served. As a result, people may be more inclined to drive while impaired.⁴¹

Suspected deaths linked to energy drinks have been reported worldwide.^{43, 44} In 2008, a 16-year-old Florida student died after consuming alcohol and energy drinks at a party.⁴⁵ Three people died in Sweden after drinking Red Bull: two had mixed Red Bull with alcohol, and the third drank it after an exercise session. There is debate regarding whether the drinks caused these deaths, but as a result, some restaurants in Sweden have banned Red Bull in their establishments.⁴⁶ The Swedish National Food Administration recommended that Red Bull not be mixed with alcohol or consumed after exercise.⁴² Norway sells Red Bull only in pharmacies because of its high level of caffeine.⁴⁵ Due to health experts’ recommendations, France and Denmark have banned Red Bull altogether. In 2004, the European Union as a whole began requiring Red Bull and other energy drinks to carry a health warning about their “high caffeine content.”⁴⁷

STRATEGIES FOR INSTITUTIONS OF HIGHER EDUCATION

The increase in use of ephedra and energy drinks calls for institutions of higher education to include these substances in their alcohol and other drug prevention efforts. Environmental management strategies⁴⁸ for reducing their use include the following: **Creating a Social, Academic, and Residential Environment That Promotes Healthy Social Norms**

- Survey students to determine the prevalence of ephedra use and energy drink consumption on campus.
- Develop social norms marketing campaigns⁴⁹ to address any exaggerated misperceptions of ephedra and energy drinks.
- Educate students and athletes about the potential risks of taking ephedra-containing products or consuming energy drinks after exercise or mixed with alcohol. Students should not only read warning labels but also know what ingredients are potentially dangerous and should be avoided.

Limiting Availability and Access

- Utilize campus and community coalitions, including law enforcement agencies, to prohibit the sale of such products on campuses.
- Work with local bars and nightclubs to discourage mixing energy drinks with alcohol.
- If bars and nightclubs continue to mix energy drinks with alcohol, encourage them to limit the amount of drinks per patron.

Restricting Marketing and Promotion

- Prohibit on-campus advertising of energy drinks or ephedra-containing herbal supplements.
- Reduce marketing and promotion targeted at athletes. Work with local bar owners to limit such marketing.
- Work with campus and community coalitions to restrict promotions in the community that advertise these products.
- Work with law enforcement to address and investigate promotions found on campus and in the surrounding community.

Enforcing Campus Policy and State and Local Laws

- Revise campus alcohol and other drug policies as necessary to include ephedra. Ban the use of energy drinks during athletics competition and training.
- Create and enforce policies that limit team participation for alcohol and other drug use.
- Communicate campus alcohol and other drug policies clearly and frequently to the community, including possible consequences for violations.

REFERENCES

1. "Ephedra: Dangerous to Take, Completely Legal to Buy." *Your Health eMagazine*, April/May 2003.
2. Shipley, A. "Pushing the Limits on Every Level; Today's Players Go to Great, Sometimes Dangerous, Lengths," *The Washington Post*, August 31, 2001.
3. O'Keefe, M. "Banning Together," *Daily News* [New York], December 1, 2002.
4. Wertheim, L. J. "Jolt of Reality: Following the Lead of Elite Athletes, Teenagers Are Increasingly Juicing Their Workouts with Pills and Powders— Sometimes with Tragic Results." *Sports Illustrated* 98(14): 68, 2003; for information on the Dietary Supplement Health and Education Act of 1994, see www.fda.gov/opacom/laws/dshea.html.
5. "Adverse Cardiovascular and Central Nervous System Events Associated with Dietary Supplements Containing Ephedra Alkaloids." *The New England Journal of Medicine* 343(25): 1833–38, 2000.
6. WorldClassNutrition.com Web site. Retrieved August 14, 2008, from <http://www.worldclassnutrition.com/buy-ephedra-diet-pills.html>.
7. Phipps, J. L. "College Jocks Speeding Up." *HealthScoutNews Reporter*, August 24, 2001.
8. Weintraub, J. "Adverse Effects of Botanical and Non-Botanical Ephedrine Products." Drugs and Devices Information Line, Harvard School of Public Health, 1997. Retrieved August 14, 2008, from <http://www.hsph.harvard.edu/Organizations/DDIL/ephedrine.html>.
9. Kenyon, M. "Misuse of Caffeine-Alcohol Concoctions, Other Energy Drink Ingredients Worry Dietitians." TCPalm Online Network, September 25, 2001.
10. Kleiman, C. F. "Imitation of Ecstasy: A Commentary on Ephedra Products." *Priorities for Health* [Newsletter of American Council on Science and Health] 9(2): 1997.
11. Food and Drug Administration, Department of Health and Human Services. "Supplements Associated with Illnesses and Injuries." *FDA Consumer Magazine* 32(5): September–October 1998.
12. "Researchers Call for Dose Guidelines and Safety Warnings for Ephedra Products," *Medical Letter on the CDC & FDA*, November 26, 2000.
13. "Ephedra: Is It Worth the Risk?" *RAND Health: Research Highlights*. Publication Number RB-4556, 2003.
14. Bent, S.; Tiedt, T. N.; Odden, M. C.; and Shlipak, M. G. "The Relative Safety of Ephedra Compared with Other Herbal Products." *Annals of Internal Medicine* 138(6): 468–472, 2003.
15. "Correction: The Relative Safety of Ephedra Compared with Other Herbal Products." *Annals of Internal Medicine* 138(12): 1012, 2003.
16. "HHS Acts to Reduce Safety Concerns Associated with Dietary Supplements Containing Ephedra." *FDA Fact Sheet*, February 28, 2003.
17. Rados, C. "Ephedra Ban: No Shortage of Reasons." Retrieved August 14, 2008, from the U.S. Food and Drug Administration Web site at http://www.fda.gov/fdac/features/2004/204_ephedra.html.
18. "FDA Announces Rule Prohibiting Sale of Dietary Supplements Containing Ephedrine Alkaloids Effective April 12." Retrieved August 14, 2008, from the U.S. Food and Drug Administration Web site at <http://www.fda.gov/bbs/topics/news/2004/NEW01050.html>.
19. "The Nation; In Brief/ Illinois; State Becomes the First to Ban Ephedra," *Los Angeles Times*, May 26, 2003.
20. Hu, W. "Albany Leaders Reach Accord on Ephedra Ban," *The New York Times*, June 10, 2003.
21. Ainsworth, B. "Senate OKs State Ban on Ephedra Products; A Threat to Market for Herbal Diet Pills, Yet Industry Silent," *The San Diego Union-Tribune*, May 13, 2003.
22. Uryasz, F. D. "Study Results Are Cause for Action, Not Concern," *NCAA News (Comment)*, August 13, 2001.
23. Utter, J. "NASCAR Bans Ephedra." Retrieved April 12, 2004, from the That's Racine Web site at www.thatracine.com/mld/thatracine/7645836.htm.
24. Vecsey, G. "Sports of the Times; Players May Have Fehr's Olympic Ambition to Thank for Ephedra Warning," *The New York Times*, March 9, 2003.
25. Schmuck, P. "Ephedrine Problems May Be New to Baseball but Not Other Sports; Stimulant in Bechler Death Banned by Many Groups," *The Baltimore Sun*, February 20, 2003.
26. "All Major Sports Leagues, Others Now Part of Ephedra Investigation." Committee News, U.S. House of Representatives, Committee on Energy and Commerce, April 9, 2003.
27. NCAA Research Staff. *NCAA Drug Education/Testing Surveys*. Indianapolis, Ind.: The National Collegiate Athletic Association, 2001.
28. The National Collegiate Athletic Association. *NCAA Study of Substance Use of College Student-Athletes*. Indianapolis, Ind.: The National Collegiate Athletic Association, 2006.
29. Bodyden Web site. Retrieved April 12, 2004, from www.bodyden.com/extreme_ripped_force_american_bodybuilding.html.
30. Food and Drug Administration, Department of Health and Human Services. "Dietary Supplements Containing Ephedrine Alkaloids; Proposed Rule." *Federal Register* 56(107), 1997.
31. Healthy Me! Web site. Retrieved August 14, 2008, from <http://www.ahealthyme.com/topic/sportsdrinks>.
32. Biovision English Web site. Retrieved July 1, 2003, from www.biovision.nl/english_page.htm.
33. Littman, M. "Club Soda." *Prepared Foods* 170(3): 13, 2001.
34. Roberts, W. A. "Courting the College Crowd." *Prepared Foods* 171(7): 16–20, 2002.
35. Amp Energy Drink Web site. Retrieved July 1, 2003, from www.ampenergy.com.
36. Red Bull Web site. Retrieved July 1, 2003, from www.redbull.com.

RESOURCES

The Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention ♦ <http://www.higheredcenter.org>

37. O'Brien, M. C.; McCoy, T. P.; Rhodes, S. D.; Wagoner, A.; and Wolfson, M. "Caffeinated Cocktails: Energy Drink Consumption, High-Risk Drinking, and Alcohol-Related Consequences among College Students." *Academic Emergency Medicine* 15: 5, 2008.
38. Malinauskas, B. H.; Aeby, V. G.; Overton, R. F.; Carpenter-Aeby, T.; and Barber-Heidal, K. "A Survey of Energy Drink Consumption Patterns Among College Students." *Nutrition Journal* 6: 35, 2007.
39. Dolan, K. "The Soda With Buzz." *Forbes*, March 28, 2005. Retrieved August 14, 2008, from <http://www.forbes.com/forbes/2005/0328/126.html>.
40. Join Together. "Anheuser-Busch Will Stop Selling Energy Drinks." Retrieved August 14, 2008, from <http://www.jointogether.org/news/headlines/inthenews/2008/anheuser-busch-will-stop.html>.
41. "Energy Drinks + Alcohol = Deadly Mix." KCBS Channel 2000, December 10, 2001.
42. McDonald, M. "Energy Drinks: Too Much of a Jolt?" *The Detroit News*, August 29, 2001.
43. "Red Bull in Suspected Link to Deaths." BBC News, July 12, 2001.
44. "Warning Labels for Energy Drinks." Australian Broadcast Center, July 31, 2001.
45. Join Together. "Florida Teen Dies After Mixing Alcohol and Energy Drinks." Retrieved August 14, 2008, from <http://www.jointogether.org/news/headlines/inthenews/2008/florida-teen-dies-after.html>.
46. "Swedish Restaurants Ban Red Bull as Deaths Probe Continues." Retrieved April 12, 2004, from the Ananova Web site at www.ananova.com/news/story/sm_347548.html?menu=news.latestheadlines.
47. "French Ban on Red Bull (Drink) Upheld by European Court." Retrieved April 12, 2004, from the Medical News Today Web site at <http://www.medicalnewstoday.com/index.php?newsid=5753>.
48. For more information about environmental strategies for alcohol and other drug prevention, see the Higher Education Center's publication *Environmental Management: A Comprehensive Strategy for Reducing Alcohol and Other Drug Use on College Campuses*.
49. For more information about social norms marketing, see the Higher Education Center's publication *Social Marketing Strategies for Campus Prevention of Alcohol and Other Drug Problems* and the Center's Social Norms and Social Marketing page at www.edc.org/hec/socialnorms/.

Daniel Ari Kapner served as writer/researcher at the Higher Education Center for Alcohol and Other Drug Prevention; Kellie Anderson contributed to the research and writing.



Office of Safe and Drug-Free Schools (OSDFS)

U.S. Department of Education
<http://www.ed.gov/osdfs>; 202-245-7896

OSDFS supports efforts to create safe schools, respond to crises, prevent alcohol and other drug abuse, ensure the health and well-being of students, and teach students good character and citizenship. The agency provides financial assistance for drug abuse and violence prevention programs and activities that promote the health and well-being of students in elementary and secondary schools and institutions of higher education.

The U.S. Department of Education's Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention

<http://www.higheredcenter.org>; 1-800-676-1730; TDD Relay-friendly, Dial 711

The Higher Education Center offers an integrated array of services to help campuses and communities come together to identify problems; assess needs; and plan, implement, and evaluate alcohol and other drug abuse and violence prevention programs. Services include training; technical assistance; publications; support for the Network Addressing Collegiate Alcohol and Other Drug Issues; and evaluation activities. The Higher Education Center's publications are free and can be downloaded from its Web site.

The Network Addressing Collegiate Alcohol and Other Drug Issues

<http://www.thenetwork.ws>; see Web site for telephone contacts by region

The Network Addressing Collegiate Alcohol and Other Drug Issues (Network) is a national consortium of colleges and universities formed to promote healthy campus environments by addressing issues related to alcohol and other drugs. Developed in 1987 by the U.S. Department of Education, the Network comprises member institutions that voluntarily agree to work toward a set of standards aimed at reducing AOD problems at colleges and universities. It has more than 1,600 members nationwide.

Join Together Online: Take Action Against Substance Abuse and Gun Violence

Join Together
<http://www.jointogether.org>; 617-437-1500

Join Together (JTO) supports community-based efforts to reduce, prevent, and treat substance abuse across the nation. JTO has long been a pioneer in using the Internet to support people working on these issues. Every month, half a million documents are viewed by users of this site, subscribers to JTO's e-mail news service, and visitors to Web sites in its syndication network.

National Collegiate Athletic Association

<http://www.ncaa.org>; 317-917-6222

The National Collegiate Athletic Association (NCAA) sponsors CHAMPS/Life Skills, a comprehensive educational program for college athletes that addresses a number of issues, including alcohol and other substance use. To participate in the CHAMPS/Life Skills program, colleges must apply to the NCAA to enroll. Once enrolled in the program, colleges receive workshop materials, training, and technical assistance. The organization also sponsors Athletic Prevention Programming and Leadership Education (APPLE) conferences for coaches, trainers, students, and health educators, working in conjunction with the University of Virginia's Institute for Substance Abuse Studies. NCAA awards grants to support substance abuse prevention programs targeting college athletes.

U.S. Food and Drug Administration

<http://www.fda.gov>; 1-888-INFO-FDA

Americans come in contact daily with a host of products regulated by the Food and Drug Administration (FDA), from the most common food ingredients to complex medical and surgical devices, lifesaving drugs, and radiation-emitting consumer and medical products. The FDA's mission is to promote and protect the public health by helping safe and effective products reach the market in a timely way and to monitor products for continued safety after they are in use.



This publication was funded by the Office of Safe and Drug-Free Schools at the U.S. Department of Education under contract number ED-04-CO-0137 with Education Development Center, Inc. The contracting officer's representative was Richard Lucey, Jr. The content of this publication does not necessarily reflect the views or policies of the U.S. Department of Education, nor does the mention of trade names, commercial products, or organizations imply endorsement by the U.S. government. This publication also contains hyperlinks and URLs for information created and maintained by private organizations. This information is provided for the reader's convenience. The U.S. Department of Education is not responsible for controlling or guaranteeing the accuracy, relevance, timeliness, or completeness of this outside information. Further, the inclusion of information or a hyperlink or URL does not reflect the importance of the organization, nor is it intended to endorse any views expressed, or products or services offered. Published July 2003; revised April 2004; latest update 2008.