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Dietary Supplements: A Challenge Facing the FDA in Mad Cow Disease Prevention

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Dietary Supplements: A Challenge Facing the FDA in Mad Cow Disease Prevention

Keywords

Mad cow disease, Dietary Supplement Health and Education Act of 1994 (“DSHEA”), Food and Drug Administration (“FDA”)

COMMENT

DIETARY SUPPLEMENTS: A CHALLENGE FACING THE FDA IN MAD COW DISEASE PREVENTION

MEGHAN COLLTON*

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INTRODUCTION

The use of dietary supplements¹ has increased dramatically in the United States over the last decade.² The dietary supplement industry is already a multi-billion dollar industry and remains one of the fastest growing³ in the United States,⁴ with more than half of the population as consumers.⁵ The rapid growth of the dietary supplement market is due, in part, to the enactment of the Dietary Supplement Health and Education Act of 1994 (“DSHEA”).⁶ Prior to DSHEA, the dietary supplement industry⁷ and consumers struggled for decades with the U.S. Food and Drug Administration (“FDA”) in an effort to increase public access to both supplements and

1. See 21 U.S.C. § 321(ff) (1994) (defining dietary supplements as vitamins, minerals, herbs or other botanicals, amino acids, or substances used to “supplement the diet by increasing the total dietary intake”).

2. See *infra* note 4 (indicating at least a \$10 billion growth in dietary supplement sales since 1994).

3. See *National and International Dietary Supplement Regulation Before the House Comm. on Government Reform*, 107th Cong. (2001) [hereinafter Levitt] (statement of Joseph A. Levitt, Esq., Director, Center for Food Safety and Applied Nutrition, Food and Drug Administration) (stating that the dietary supplement industry is currently one of the world’s fastest growing industries), available at <http://vm.cfsan.fda.gov/~lrd/st010320.html>.

4. See *Mad Cow Disease Before the Subcomm. on Consumer Affairs, Foreign Commerce, and Tourism of the Senate Comm. on Commerce, Sci., and Transp.*, 107th Cong. (2001) [hereinafter Lurie] (Testimony of Peter Lurie, MD, MPH, Deputy Director, Public Citizen’s Health Research Group) (testifying that as of April 2001 dietary supplements were a \$14 billion industry), available at <http://www.senate.gov/~commerce/hearings/0404lur.PDF> (last visited Apr. 4, 2001); see also Dietary Supplement Health and Education Act of 1994, Pub. L. No. 103-417, § 2(12)(C), 108 Stat. 4325, 4326 (indicating that in 1994, at the time DSHEA was enacted, the dietary supplement industry was a \$4 billion industry); Levitt, *supra* note 3 (reporting that dietary supplement sales reached \$17 billion in 2000).

5. See, e.g., DSHEA, Pub. L. No. 103-417, § 2(9), 108 Stat. 4325, 4326 (1994) (finding that in 1994 almost half of all Americans regularly consumed dietary supplements); see also DEPARTMENT OF HEALTH AND HUMAN SERVICES, OFFICER OF THE INSPECTOR GENERAL, ADVERSE EVENT REPORTING FOR DIETARY SUPPLEMENTS: AN INADEQUATE SAFETY VALVE (2001) [hereinafter *Adverse Event Reporting*] (citing results of survey that found sixty percent of the U.S. population consumes dietary supplements daily) (citation omitted), available at <http://oig.hhs.gov/oei/summaries/a519.pdf>.

6. See *infra* Part II.B (explaining DSHEA contribution to industry growth); see also *Dietary Supplement Health and Education Act: Is the FDA Trying to Change the Intent of Congress?: Hearing Before the House Comm. on Government Reform*, 106th Cong. 34 (1999) (statement by Jane E. Henney, M.D., Commissioner, Food and Drug Administration, Department of Health and Human Services) (recognizing that the dietary supplement industry has grown exponentially following the enactment of DSHEA); *supra* note 4 (showing actual growth of the dietary supplement market since DSHEA enacted).

7. Dietary supplement industry refers to dietary supplement manufacturers, distributors and trade associations.

information regarding the benefits of supplements.⁸ Although DSHEA has successfully increased consumer access to a variety of supplements,⁹ the Act has placed consumer safety in the hands of a billion dollar industry over which the FDA has little regulatory power.¹⁰ When considering DSHEA, Congress had limited concerns about such deregulation because safety problems with dietary supplements were infrequent.¹¹ However, a health threat never before considered illustrates how greater consumer access and the deregulation stemming from DSHEA may translate into increased health risks to consumers.¹² Dietary supplements may carry Bovine Spongiform Encephalopathy (“BSE”),¹³ commonly known as mad cow disease, and the FDA, under the current law, is virtually powerless to protect consumers from this threat.¹⁴

This Comment explores the effects of DSHEA on the FDA’s regulatory power and the subsequent difficulties facing the FDA in its efforts to protect U.S. consumers from dietary supplements that may carry BSE. Part I illustrates both the nature of the disease and the risks posed by dietary supplements. In addition, Part I highlights efforts by various U.S. government agencies to prevent the spread of the disease to the U.S. population. Part II traces the historical and current relationship between the dietary supplement industry and the FDA before and after the enactment of DSHEA. Part III analyzes whether the FDA can regulate bovine ingredients in supplements under DSHEA. Part III concludes that, under DSHEA, the FDA is powerless to assert regulatory control over the bovine contents of dietary supplements. Finally, Part IV outlines recommendations for Congressional action to authorize the FDA to better protect consumers from BSE without reducing consumer access to dietary

8. See *infra* Part II.A (relating the historical struggle between the FDA on the one hand, trying to implement regulations for dietary supplements, and the dietary supplement industry, Congress and many consumers on the other, trying to increase consumer access to a wider variety of dietary supplements and information regarding the uses of supplements).

9. See *infra* Part II.B (describing how DSHEA allowed manufacturers to offer a wider array of dietary supplements).

10. See *infra* Part III (discussing the difficulties facing the FDA in its regulation of dietary supplements).

11. See DSHEA, Pub. L. No. 103-417, § 2(14), 108 Stat. 4325, 4326 (1994) (finding dietary supplements “safe within a broad range of intake” and safety problems rare).

12. See *infra* Part I.C (illustrating the BSE related health risks posed by dietary supplements); see also *infra* Part III (analyzing the FDA’s inability to protect consumers from BSE in dietary supplements).

13. See *infra* Part I.C (explaining how dietary supplements may carry BSE).

14. See *infra* Part III (highlighting restrictions faced by the FDA when regulating dietary supplements).

supplements.

I. THE THREAT OF BSE

“Transmissible Spongiform Encephalopathies (“TSE”) are a group of transmissible, slowly progressive, degenerative diseases of the central nervous systems of humans and several species of animals.”¹⁵ As a result of media attention, the most publicly recognized TSE is mad cow disease, but many other TSEs exist.¹⁶

A. History of TSE

The earliest records of TSEs date back to the 1700s, when scrapie, TSE occurring in sheep, was discovered in Central Europe.¹⁷ Creutzfeldt-Jakob disease (“CJD”), a TSE occurring in humans, was first reported in 1920-1921 by two separate scientists.¹⁸ CJD is thought to occur spontaneously in one person per million throughout the world.¹⁹ Another human TSE, kuru, was prevalent in New Guinea

15. *Mad Cow Disease Before the Subcomm. on Consumer Affairs, Foreign Commerce, and Tourism of the Senate Comm. on Commerce, Sci., and Transp.*, 107th Cong. (2001) [hereinafter Sundlof] (statement by Stephen Sundlof, D.V.M., Ph.D., Director, Center for Veterinary Medicine, Food and Drug Administration), available at <http://www.senate.gov/~commerce/hearings/0404sun.pdf>.

16. TSEs include: scrapie, the most studied TSE, affecting sheep and goats; Chronic Wasting Disease (“CWD”) affecting deer and elk; Transmissible Mink Encephalopathy (“TME”) affecting mink; and Feline Spongiform Encephalopathy affecting cats. TSEs affecting humans include: kuru; Creutzfeldt-Jakob disease (“CJD”); new variant CJD (“vCJD”); Gerstmann-Sträussler Syndrome (“GSS”); and Fatal Familial Insomnia (“FFI”). See, e.g., 1 THE BSE INQUIRY 10 (2000) (THE BSE INQUIRY is an official inquiry of the government of the United Kingdom which was formed to study both BSE in England and the government’s response to the crisis), available at <http://www.bseinquiry.gov.uk>; Stephen F. Dealler & Richard W. Lacey, *Transmissible Spongiform Encephalopathies: The Threat of BSE to Man*, 7 FOOD MICROBIOLOGY 253-79 (1990), reprinted in RICHARD LACEY, *POISON ON A PLATE: THE DANGERS IN THE FOOD WE EAT—AND HOW TO AVOID THEM* app. 3, at 240 (1998) [hereinafter *POISON ON A PLATE*] (discussing the history of scrapie); RICHARD RHODES, *DEADLY FEASTS: TRACKING THE SECRETS OF A TERRIFYING NEW PLAGUE* 201 (1997) [hereinafter RHODES, *DEADLY FEASTS*] (identifying a study which had discovered sixteen different familial forms of CJD such as GSS, an inherited form of CJD, another FFI “produced a horrible variant of CJD . . . which blocked sleep in afflicted family members until they hallucinated, lapsed into a coma and eventually died.”).

17. See, e.g., *POISON ON A PLATE*, *supra* note 16, at 241 (recognizing the first description of scrapie occurred in Germany in 1759); 1 THE BSE INQUIRY ¶ 60, at 13 (2000) (acknowledging the first case of scrapie in England some 200 years ago), available at <http://www.bseinquiry.gov.uk>; RHODES, *DEADLY FEASTS*, *supra* note 16, at 60 (stating that the first case of scrapie in the United States occurred in Michigan in 1947).

18. See, e.g., *POISON ON A PLATE*, *supra* note 16, at 242 (identifying Creutzfeldt and Jakob as the two scientists who first independently described CJD).

19. See, e.g., RHODES, *DEADLY FEASTS*, *supra* note 16, at 49-50 (noting that CJD occurs in about one person per million world-wide with “uncanny regularity” across all the world’s races and climates); *id.* at 49 (describing CJD as an uncommon but not rare disease; rabies, for example, is rarer).

among the Fore people and was discovered by scientists in the 1950s.²⁰ Thought to spread through cannibalism, kuru reached epidemic proportions before dying out slowly years after the tribe ended its practice of ritualistic cannibalism.²¹

Attempting to uncover the cause and characteristics of kuru, scientists discovered the ability to transmit TSEs across species barriers.²² This was accomplished by injecting animals with infected tissue and by feeding kuru, CJD, and scrapie infected brains to animals.²³ Despite this discovery, the British and American meat industries continued the widespread practice of feeding animals other animals deemed unfit for human consumption²⁴ and unmarketable animal parts.²⁵ This practice turned cattle, sheep, pigs, and chickens, all traditionally herbivores, into carnivores as well as cannibals and resulted in farm animals eating infected meat.²⁶

It is widely accepted that this process of feeding scrapie-infected sheep to other animals led to the initial 1985 outbreak of BSE in the United Kingdom.²⁷ The practice of turning cattle into cannibals led

20. See *id.* at 27-43 (relating the story of the Fore peoples struggle with kuru, which was first noticed by an Australian public-health officer, Dr. Vincent Zigas, who was joined by Dr. D Carleton Gajdusek in studying the disease).

21. See, e.g., *id.* at 128 (detailing the decline of kuru among the Fore); *POISON ON A PLATE*, *supra* note 16, at 242 (noting the prevalence of kuru in the Fore tribe and its probable link to cannibalism).

22. See, e.g., *POISON ON A PLATE*, *supra* note 16, at 252 (placing cross species infectivity rate at fifty percent).

23. See, e.g., RHODES, *DEADLY FEASTS*, *supra* note 16, at 81 (noting that the discovery of TME in ranch minks led veterinarians to believe infection came from feed); *id.* at 98 (noting that chimpanzees inoculated with kuru died with pathology "indistinguishable from human kuru").

24. See *id.* at 174-75 (describing the centuries old practice of supplementing cattle, sheep, pig and chicken diet with animal protein becoming a commercial enterprise during the Second World War, resulting in the production of cheaper milk and meat by increasing the productivity of dairy cattle and the amount of meat per animal); 1 THE BSE INQUIRY ¶ 110, at 21 (2000) (expressing the inevitability of the spread of BSE due to the recycling of cattle remains into cattle feed), *available at* <http://www.bseinquiry.gov.uk>.

25. See RHODES, *DEADLY FEASTS*, *supra* note 16, at 176 (stating that the marketing of materials sent from slaughterhouses, deboning plants, butcher shops, and farms included fat trimmings, bones, guts, heads, tails, blood and feathers).

26. See, e.g., 1 THE BSE INQUIRY ¶ 62, at 13 (2000) (discussing the practice of feeding farm animals possibly infected meat and bone meal), *available at* <http://www.bseinquiry.gov.uk>; RHODES, *DEADLY FEASTS*, *supra* note 16, at 176 (describing the process of making meat and bone meal from the carcasses of cattle, sheep, pig and poultry feathers to be fed back to the same species of animals).

27. See, e.g., 1 THE BSE INQUIRY ¶ 62, at 13 (2000) (concluding that the BSE outbreak in England was caused by meat and bone meal that had been made of scrapie infected sheep), *available at* <http://www.bseinquiry.gov.uk>; Physicians Committee for Responsible Medicine, *MAD COW DISEASE: THE RISK TO THE U.S.* (indicating the commonly held scientific belief that cows in the United Kingdom initially became infected with BSE by eating scrapie-infected sheep), *available at* http://www.pcrm.org/health/Preventive_Medicine/mad_cow_disease.html.

to the rapid spread of BSE throughout England,²⁸ a practice that continued long after feed restrictions were put into place.²⁹ BSE reached epidemic proportions in England,³⁰ spread to other countries,³¹ and jumped the species barrier, surfacing in the human population as new variant CJD (“vCJD”).³²

B. *The Formation of TSE*

Researchers, generally, accept the prion theory that states deformed proteins, called prion proteins, cause TSEs.³³ While most

28. See, e.g., SHELDON RAMPTON & JOHN STAUBER, *MAD COW U.S.A.: COULD THE NIGHTMARE HAPPEN HERE?* 93 (1997) (discussing the rapid spread of the disease once diseased animals of the same species are fed to each other because the species barrier obstacle, which makes the spread of TSEs more difficult, has been removed); RHODES, *DEADLY FEASTS*, *supra* note 16, at 172 (acknowledging that the first cattle recognized as dying from BSE were sent to the “knacker yard” and made into meat-and-bone meal to be fed to other cattle).

29. See, e.g., 1 *THE BSE INQUIRY* 68 (2000) (indicating over 41,000 cattle became infected with BSE after the feed ban was in place), available at <http://www.bseinquiry.gov.uk>; RHODES, *DEADLY FEASTS*, *supra* note 16, at 180 (mentioning the theory that the disease was spread by contaminated feed transmission from 1981 until a ruminant feed ban was ordered in 1988); *POISON ON A PLATE*, *supra* note 16, at 225, 227 (accusing many farmers of slaughtering cattle at the first sign of BSE, selling their meat for human consumption and their waste parts for rendering as animal feed even after a feed ban was in place because the government would only reimburse farmers for half the price they could get on the market).

30. See, e.g., Sundlof, *supra* note 15 (identifying peak of UK BSE epidemic as occurring in 1993 with 1000 new cases of BSE discovered each week and in total killing over 180,000 cattle in the United Kingdom).

31. See, e.g., RHODES, *DEADLY FEASTS*, *supra* note 16, at 214 (noting that the spread to Europe was not surprising because meat-and-bone meal was sent to Europe from England until 1988 and stating that British suppliers illegally dumped hundreds of thousands of contaminated products to other countries after 1988). Between 1985 and 1990 England shipped 57,900 breeding cattle to Europe, and in 1995 more than 100,000 British veal calves were exported and absorbed into herds in France, Italy, Spain and Holland. See *id.* An updated list of countries where BSE has been identified in cattle is maintained by the U.S. Department of Agriculture. See 9 C.F.R. § 94.18 (2001).

32. See, e.g., 1 *THE BSE INQUIRY* ¶ 57, at 11 (2000) (stating confidently that vCJD was caused by transmission of BSE to humans and presenting a summary of the evidence establishing this conclusion), available at <http://www.bseinquiry.gov.uk>. vCJD differs from the classic form of CJD in that its victims die at a much younger age and suffer a longer illness. See *Variant CJD (vCJD)*, 8 *THE BSE INQUIRY* ¶ 5.149(i), at 66 (2000) (placing the median age for CJD at 66 and the median age for vCJD at 29 and indicating the actual symptoms and illness for CJD last an average of 4 months until death as opposed to vCJD where the average length of illness is 14 months), available at <http://www.bseinquiry.gov.uk>.

33. See 1 *THE BSE INQUIRY* ¶¶ 51-52, at 10-11 (2000) (noting that while other theories exist, the prion theory that TSEs are caused by a reaction between proteins enjoys general, though not universal acceptance), available at <http://www.bseinquiry.gov.uk>; Michael Balter, *Prions: A Lone Killer or Vital Accomplice?*, 286 *SCI.* 660, 661-62 (1999) (stating that, while a debate over prion theory exists, there is general agreement that the prion proteins are necessary for the disease to occur because of the failure to find the presence of a virus or other organism); Stanley B. Prusiner, *The Prion Diseases*, 272 *SCI. AM.* 48, 49 (1995) [hereinafter Prusiner, *The Prion Diseases*] (noting that there is a wealth of convincing research that prion proteins are

mammals produce prion proteins,³⁴ the deformed prion proteins induce normal prion proteins within an organism to become deformed.³⁵ Deformed proteins of an animal suffering from BSE can enter a human body through ingestion of those deformed prion proteins or through the introduction of those deformed prion proteins via surgical procedures.³⁶ In some cases normal prion proteins appear to deform spontaneously.³⁷ The deformed prion proteins spread throughout the body causing damage to the brain in the form of sponge-like holes and a build up of plaques.³⁸

TSEs have a prolonged incubation period that may vary in duration

responsible (1) for transmissible and inherited diseases of protein conformation and (2) for sporadic diseases, but recognizing that some skepticism remains about the theory). See generally RHODES, DEADLY FEASTS, *supra* note 16, at 153-68 (chronicling the earlier scientific struggle to discover the infectious agent that causes TSEs, including Patricia Metz's research in the 1970s and Prusiner's brash research in the 1980s and 1990s).

Stanley B. Prusiner received the Nobel Prize in Physiology or Medicine in 1997 for championing the prion theory. See Harriet Coles, *Nobel Panel Rewards Prion Theory After Years of Heated Debate*, 389 SCI. 529, 529 (1997) (commenting that there still remains skepticism about the completeness of Prusiner's prion theory).

34. See *id.* at 51-53 (recounting that during research on prions, the researchers noticed the presence of prion proteins in mice, humans, and all other mammals tested).

35. See 1 THE BSE INQUIRY ¶ 52, at 11 (2000) (indicating that a chain reaction leads to the spread of deformed prion proteins to and within the brain, which causes the brain to become damaged resulting in illness, followed by death to the organism), available at <http://www.bseinquiry.gov.uk>; Prusiner, *The Prion Diseases*, *supra* note 33, at 57-60 (noting that, while many details need to be worked out, the inducement is a result of conformation, i.e., the deformed prion proteins contact normal prion proteins causing the normal prion proteins to unfold and to assume the deformed prion protein shape).

36. See, e.g., 1 THE BSE INQUIRY ¶ 54, at 11 (2000) (recognizing consumption of an animal infected with TSE as the most likely way for TSEs to enter the body, but also noting that TSEs have been transmitted through infected surgical instruments despite sterilization); RHODES, DEADLY FEASTS, *supra* note 16, at 131, 133 (portraying the case of a woman who died of CJD two years after receiving a transplanted cornea from a man with CJD); see also Stanley Prusiner, *Prion Diseases and the BSE Crisis*, 278 SCI. 245, 248 (1997) [hereinafter Prusiner, *BSE Crisis*] (stating BSE in cattle may be caused by feeding the cattle a high fat content meal and bone meal, derived from sheep, cattle, pigs, and chickens that may have been infected with BSE). By 1996, 80 young people had died of CJD as a result of receiving human growth hormone treatments as children in order to prevent dwarfism. The growth hormone treatments made over an eleven-year period used close to half a million pituitary glands and it is estimated that between 25 and 250 of those may have been infected with CJD. RHODES, DEADLY FEASTS, *supra* note 16, at 149-50 (noting that the growth hormone was prepared from pituitary glands of human cadavers).

37. See POISON ON A PLATE, *supra* note 16, at 242 (noting that the majority of CJD cases appear to occur sporadically, typically in late middle ages and in both sexes); Prusiner, *The Prion Diseases*, *supra* note 33, at 48-50 (acknowledging that deformed prion proteins cause sporadic disease, in which neither transmission between organisms or inheritance is evident, such as CJD or iatrogenically spread, i.e., inadvertently spread by attempting to treat another problem).

38. See, e.g., 1 THE BSE INQUIRY ¶ 52, at 11 (2000) (discussing the damage TSE causes, noting such damage includes the appearance of holes in the brain that give the brain a sponge-like appearance), available at <http://www.bseinquiry.gov.uk>.

depending on the type of animal infected or the method of transmission.³⁹ All TSEs are fatal,⁴⁰ with victims suffering a horrible death.⁴¹ Presently, no test for infectivity exists.⁴² Meat, dietary supplements, and other products using animal ingredients, therefore, cannot be tested for TSEs.⁴³ TSE remains in the body of animals after death and is extremely resistant, surviving conditions that are adequate to kill many other infective agents.⁴⁴ The varying degrees of infectivity for different parts of an animal can only be determined by feeding or injecting animals with the parts of infected animals and waiting for the illness to appear.⁴⁵

C. Health Risks Posed By Dietary Supplements

Although many consumers believe dietary supplements are

39. See, e.g., *POISON ON A PLATE*, *supra* note 16, at 241, 255 (characterizing all types of TSEs as having a long incubation period, but noting that for kuru, a human TSE, incubation has been shown in some cases to be over thirty years); Prusiner, *BSE Crisis*, *supra* note 36, at 248 (noting that the mean incubation period for BSE in cattle is five years).

40. See, e.g., *POISON ON A PLATE*, *supra* note 16, at 240-41 (stating that all TSEs are inevitably fatal, with no treatment available).

41. See *id.* at 242 (detailing the death of a CJD victim:

The first symptoms are pains and trembling in muscles, and loss of coordination . . . tremors are common . . . [m]ental changes include depression, loss of memory and confusion. Blindness and epilepsy are frequent. Towards the end of the illness, the patient is confined to bed, is incontinent, helpless, and requires constant nursing. Death usually occurs between 3 and 9 months after the onset of the illness. However, this can vary from a few weeks to 5 years.);

RHODES, *DEADLY FEASTS*, *supra* note 16, at 92-98 (describing the decline of a chimpanzee suffering from a TSE that began with trembles, loss of balance, and slow movement, followed by shaking, chills, loss of eyesight, and death).

42. See Dov J. Stekel et al., *Prediction of Future BSE Spread*, 381 *NATURE* 119, 119 (1996) [hereinafter *Prediction of Future BSE Spread*] (noting that infection can be confirmed only after death by inspecting the infected animals brain); see also RHODES, *DEADLY FEASTS*, *supra* note 16, at 38, 49 (discussing the method for testing infectivity from prion disease, which is to take cross-sections of the brain during an autopsy).

43. See *Prediction of Future BSE Spread*, *supra* note 42, at 119 (stating that there is no method for testing products for infectivity).

44. See RHODES, *DEADLY FEASTS*, *supra* note 16, at 120 (“[TSE] survived thirty minutes of boiling. It survived two months of freezing. It survived disinfection with strong formaldehyde, carbolic acid and chloroform. It passed through fine filters It remained viable in dried brain for at least two years, and resisted a considerable dose of ultraviolet light.”); see also COMMUNICABLE DISEASES SURVEILLANCE RESPONSE, WORLD HEALTH ORG., REPORT OF WHO CONSULTATION ON PUBLIC HEALTH ISSUES RELATED TO HUMAN AND ANIMAL TSEs 3 (1996) [hereinafter WHO REPORT] (recognizing that the BSE agent is remarkably resistant to procedures that commonly destroy the infectivity of other microorganisms).

45. See 2 *THE BSE INQUIRY* 117-18 (2000) (explaining that the process by which scientists test for infectivity of various bovine tissues requires grinding infected tissue in a salt solution and giving healthy animals diluted dosages of such solutions), available at <http://www.bseinquiry.gov.uk>.

vegetarian,⁴⁶ most dietary supplements actually contain animal products.⁴⁷ Gelatin, the animal derived ingredient most often found in dietary supplements, is used to make both soft-gel capsules and dry tablets.⁴⁸ Gelatin is made from the skin and bones of cattle and the skin of pigs.⁴⁹ Gelatin poses a potential risk of carrying BSE because of the use of cattle bones⁵⁰ and the high resistance of BSE.⁵¹ Several organizations initially determined gelatin to be relatively safe for both human and animal consumption⁵² because of both the processing intensity required for its production⁵³ and the low risk of infectivity

46. See Scott Norton, *Raw Animal Tissues and Dietary Supplements*, 343 NEW ENG. J. MED. 304, 304-05 (2000) (Letter to the Editor) (noting that certain people, including vegetarians, vegans, consumers wary of “mad cow disease,” and persons with religious restrictions on their diets, are unaware of the contents of dietary supplements yet have strong interest in knowing such contents, and adding that an easy way to communicate this information is through easily understandable labels).

47. See *infra* notes 48, 63 and accompanying text (noting the use of animal products in the encapsulation process and as ingredients in several dietary supplements).

48. See FDA Talk Paper, *Safety of Gelatin and Gelatin By-Products Reviewed 2* (Apr. 24, 1997) [hereinafter *Safety of Gelatin*] (listing the uses of gelatins including candies, desserts, vaccines, drugs, medical devices, dietary supplements, and cosmetics), available at <http://www.cfsan.fda.gov/~lrd/tpgelatn.html>.

49. See 13 THE BSE INQUIRY ¶¶ 8.58-8.65, at 122-23 (2000) (stating that although the gelatin processing is relatively mild, the extraction procedure is likely to remove and deactivate the BSE agent if present, but no guarantee exists that the raw materials have been kept separate from bovine brains or spinal cords), available at <http://www.bseinquiry.gov.uk>; *Safety of Gelatin*, *supra* note 48, at 2 (noting that during manufacturing of gelatin the hides and bone are subjected to harsh conditions, including prolonged exposure to highly acid solutions).

50. See *infra* notes 58-59 and accompanying text (raising concerns about the use of certain bones in the production of gelatin); see also FOOD COMPLIANCE PROGRAM, U.S. FOOD & DRUG ADMIN., FOOD COMPOSITION, STANDARDS, LABELING AND ECONOMICS: DIETARY SUPPLEMENTS—IMPORT AND DOMESTIC app. A (Feb. 17, 2000) [hereinafter FOOD COMPLIANCE PROGRAM] (listing brain and spinal cord tissues as posing a high risk of infectivity), available at <http://www.cfsan.fda.gov/~comm/cp21008.html>.

51. See *supra* note 44 and accompanying text (discussing the extremely harsh conditions TSEs have been found to resist).

52. See *Safety of Gelatin*, *supra* note 48, at 1 (noting that in 1994, based on the available scientific data, the FDA exempted gelatin from recommendations not to import bovine products from countries known to be have BSE); see also 11 THE BSE INQUIRY ¶¶ 4.461-4.462, at 150-51 (2000) (highlighting that, in a 1992 report, the EC committee on BSE adopted the position that gelatin was safe to use), available at <http://www.bseinquiry.gov.uk>; WHO REPORT, *supra* note 44, at 3 (considering gelatin safe if produced using production conditions that have been shown to significantly inactivate infectivity). *But see* 11 THE BSE INQUIRY ¶¶ 4.499-4.501, at 159 (2000) (noting later evidence suggested that the process of creating gelatin did not inactivate the BSE as originally believed), available at <http://www.bseinquiry.gov.uk>.

53. See 11 THE BSE INQUIRY ¶ 4.464, at 151 (2000) (stating that a common assumption was that “gelatin[] is produced under such vigorous conditions that it gives no cause for concern”), available at <http://www.bseinquiry.gov.uk>; see also BSE INQUIRY, *supra* note 49, ¶¶ 8.58-8.65, at 122-23 (explaining that the production of gelatin involves an initial treatment, an acid or alkaline pre-treatment, followed by a neutralizing and washing, which in turn is followed by the extraction process in which successively hotter water is used, next come a purification step involving high

bones pose.⁵⁴

Recently, however, concerns have surfaced regarding both the actual success of inactivating BSE during processing and the use of certain bones in gelatin manufacturing.⁵⁵ For example, a private research contractor hired by European gelatin manufacturers conducted the research on which the European Community relied in finding the infectivity of gelatin negligible.⁵⁶ “[F]urther work by th[e] group resulted in reassessment indicating rather lower levels of inactivation in the gelatin manufacturing process.”⁵⁷ Furthermore, while cattle bones pose only a small risk of infectivity, the common use of cattle skulls and vertebrae in gelatin poses a potentially higher risk.⁵⁸ This risk is greater because of the contamination of bone by nervous tissue remaining on the backbone and the difficulty of removing all of the brain from the skull.⁵⁹ In 1997, the FDA acknowledged the potential risks gelatin posed.⁶⁰ The FDA reversed its prior position and included gelatin from countries linked to BSE as among the animal products dietary supplement manufacturers should avoid.⁶¹

speed separators and all these procedures are followed by a filtering step, and finally, concentrating and drying).

54. See 11 THE BSE INQUIRY ¶ 4.464, at 157-59 (2000) (noting general satisfaction with the safety of gelatin if there exist assurances that cattle skulls and spinal chords were not used in the manufacturing of gelatin), available at <http://www.bseinquiry.gov.uk>.

55. See *infra* notes 56-59 and accompanying text (identifying doubts that have been raised in recent years concerning the safety of gelatin).

56. See 11 THE BSE INQUIRY ¶ 4.498, at 159 (2000) (indicating possible bias in original studies), available at <http://www.bseinquiry.gov.uk>; see *id.* at 151 (“[T]he process [of making gelatin as] described was, to me, shockingly mild. Moreover . . . any old cow bone went into the production vat, including spine and skull.” (quoting Dr. Philip Minor, Head of Virology at NIBSC)).

57. 11 THE BSE INQUIRY ¶ 4.498, at 159 (2000) (citations omitted), available at <http://www.bseinquiry.gov.uk>.

58. See *id.* (discussing causes for concern in gelatin production including the use of “[c]attle heads and, less commonly, spinal columns . . . [which are] likely, on occasion, to be contaminated with brain, spinal cord or dorsal root ganglia”); see also FOOD COMPLIANCE PROGRAM, *supra* note 50, at app. A (listing brain, brain extract, spinal cord, and ganglia tissues as high risks for infectivity).

59. See 11 THE BSE INQUIRY ¶ 4.487, at 156 (2000) (“[T]he risk of some nervous tissue contaminating bone exists with the backbone as well as the skull . . . there might be an argument that it is more difficult to remove the base of the brain from the skull and that the risk of cross-contamination is greater but [] we cannot completely exclude any risk from the backbone.”), available at <http://www.bseinquiry.gov.uk>.

60. See *Safety of Gelatin*, *supra* note 48, at 1-2 (stating that based on new information it can no longer be assumed that gelatin from BSE-infected countries is safe).

61. See *id.* (reversing its prior stance that gelatin be exempted from recommendations against the use of materials from countries known to have BSE); see also *POISON ON A PLATE*, *supra* note 16, at 234 (reporting that in each month of 1996, the United Kingdom exported around 600 tons of gelatin to non-BSE

The gelatin in dietary supplements does not pose the only BSE threat in dietary supplements. "Glandulars"⁶² often contain some of the highest risk cattle ingredients.⁶³ One dietary supplement was found to contain seventeen cow organs including the brain, pituitary, and pineal gland,⁶⁴ all of which are among the most infective parts of the cow.⁶⁵ As a result, the FDA, recognizing BSE health concerns supplements containing bovine products pose,⁶⁶ has made recommendations to the supplement industry, strongly urging manufacturers to avoid using all cattle derived products from BSE countries in dietary supplements.⁶⁷

D. Efforts to Prevent a BSE Outbreak in the U.S. Food Supply

A BSE outbreak in the United States would potentially be more devastating than the outbreak in the United Kingdom,⁶⁸ resulting in significant financial losses to the cattle industry,⁶⁹ significant

countries for the production of processed food, which then entered the United States).

62. See Susan Freinkel, *Could You Get Mad Cow From a Pill?*, HEALTH, June 2001, at 66 (defining glandulars as nutritional supplement pills that consist of ground up dried animal glands and tissue, most often derived from cows).

63. See FOOD COMPLIANCE PROGRAM, *supra* note 50, at app. A (ranking various cattle glands, such as pineal, pituitary, and adrenal, and tissues as among the cattle parts posing a moderate to high risk of infectivity).

64. See Norton, *supra* note 46, at 304-05 (raising several issues for persons concerned with prion diseases including the poor labeling of nutritional supplements, confusing and misleading etymological and technical terms, and the small print used to list ingredients); see also Meredith Wadman, *Agencies Face Uphill Battle to Keep United States Free of BSE*, 409 NATURE 441, 442 (2001) (stating that the USDA ban on food or medical products containing bovine products does not encompass dietary supplements, including a nationally distributed supplement containing seventeen bovine organs, one of which is brain).

65. See FOOD COMPLIANCE PROGRAM, *supra* note 50, at app. A (categorizing brain tissues as high risks for infectivity, and pituitary and pineal glands as moderate risks for infectivity).

66. See *infra* Parts I.C and I.D (discussing the U.S. government's concerns about the spread of BSE and efforts to prevent an outbreak); see also RAMPTON & STAUBER, *supra* note 28, at 150-51 (discussing the start of FDA concerns in November 1992 regarding the supplement industry's use of bovine derived products around the same time as the FDA began an investigation into the death of a woman from CJD when it was discovered she was taking dietary supplements containing bovine materials); Freinkel, *supra* note 62, at 66 (discussing a situation where a healthy woman who had been taking supplements containing cow brain, eye and bone died of CJD and the neighbor who took the same supplement also died of CJD, an unusual coincidence for a disease occurring spontaneously in only one in every million people).

67. See *infra* notes 95-100 (outlining FDA recommendations to the supplement industry).

68. See RHODES, DEADLY FEASTS, *supra* note 16, at 228 (comparing the 100 million cattle in the United States with fewer than 10 million in Britain); see also RAMPTON & STAUBER, *supra* note 28, at 212 (noting FDA estimates that a U.S. BSE epidemic would kill 299,000 U.S. cattle over eleven years amounting to twice the size of Britain's BSE epidemic).

69. See Eric Jan Hansum, *Where's the Beef? A Reconciliation of Commercial Speech and*

government costs,⁷⁰ and diminished consumer faith in the safety of the U.S. food supply.⁷¹ The U.S. Government has recognized the need to prevent an outbreak of BSE “due to the invariably fatal nature of the disease, the lack of routine methods to destroy the agent, the ubiquitous presence of bovine products in most people’s daily lives, and the nascent level of scientific knowledge about prion disease.”⁷² The U.S. Government, accordingly, has taken several measures in an attempt to prevent BSE from entering the country.⁷³ While the FDA and the USDA tout the sufficiency of their regulations and the safety of U.S. beef,⁷⁴ many scientists and consumer groups have stated the government’s preventative measures are insufficient,⁷⁵

Defamation Cases in the Context of Texas’s Agricultural Disparagement Law, 19 REV. LITIG. 261, 262 (2000) (discussing both the plummet in beef prices following a conversation on The Oprah Winfrey Show that highlighted the possibility of BSE in U.S. cattle and the resultant civil suits brought against Oprah Winfrey by several cattle ranchers for financial damages).

70. See *Food Safety: Controls Can Be Strengthened to Reduce the Risk of Disease Linked to Unsafe Animal Feed*, GEN. ACCT. OFF. REP. NO. RCED-00-255, at 10 (Sept. 22, 2000) (“The U.S. Department of Agriculture’s Animal and Plant Health Inspection Service estimates that as of 1999, the cost of BSE in the United Kingdom had reached \$6.74 billion.”).

71. If consumer faith in beef can plummet due to a discussion on The Oprah Winfrey Show about the *potential* for a BSE outbreak in the United States, an actual outbreak of BSE would likely have a greater effect on consumer confidence. See Hansum, *supra* note 69, at 262 (indicating that beef prices fell dramatically the day following the airing of The Oprah Winfrey show).

72. BERNARD A. SCHWETZ, U.S. FOOD AND DRUG ADMIN., ACTION PLAN: TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHIES, INCLUDING BOVINE SPONGIFORM ENCEPHALOPATHY AND CHRONIC WASTING DISEASE, Apr. 24, 2001, available at http://www.fda.gov/oc/oca/roundtable/bse/FDA_actionplan.html.

73. See *infra* notes 77-93 (outlining U.S. Government efforts to prevent BSE from entering the United States).

74. See, e.g., Sundlof, *supra* note 15 (stating that currently there is no evidence of BSE in the United States and that FDA and other Federal agencies are working diligently to keep BSE out of the United States and have been actively involved nationally and internationally in efforts to understand and prevent the spread of BSE); U.S. FOOD AND DRUG ADMIN., CENTER FOR FOOD SAFETY AND APPLIED NUTRITION, CONSUMER QUESTIONS AND ANSWERS ABOUT BSE (Mar. 2001) (touting the safety of all products found in the United States and presenting the restrictions on bovine products as fool proof), available at <http://www.cfsan.fda.gov/~comm/bsefaq.html>.

75. See Lurie, *supra* note 4 (indicating that U.S. surveillance efforts for detecting BSE have been insufficient to truly determine whether the disease has infected the U.S. cattle population and also noting the insufficiency of surveillance for CJD and vCJD); see also RAMPTON & STAUBER, *supra* note 28, at 216 (criticizing feed ban for exempting pigs because it leaves the door open for mad cow disease through animals known to have TSEs in the U.S., such as sheep, elk and deer, to be fed to pigs and pigs can in turn be fed to cows); RHODES, DEADLY FEASTS, *supra* note 16, at 220 (stating that pigs may already have the disease and the public would never know because of the long incubation period of TSEs and the fact that pigs are slaughtered at two or three years old long before symptoms of a TSE would show) (citing Carleton Gajdusek); Letter from Animal Welfare Institute, Cancer Prevention Coalition, Center for Food Safety, Community Nutrition Institute, Family Farm Defenders, Farm Sanctuary, Global Resource Action Center for the Environment, Government Accountability Project, Humane Farming Association, Institute for

and some assert the beef supply is already infected with BSE.⁷⁶

In 1989, four years after the first cases of BSE were detected in England, the U.S. Government took its first step in BSE prevention when the USDA proposed to ban the importation of cattle from Britain.⁷⁷ Unfortunately, this ban was not applicable to “bovine-derived materials intended for human consumption as either finished dietary supplement products or for use as ingredients in dietary supplements.”⁷⁸ In 1990, the USDA began a surveillance program aimed at detecting BSE in U.S. cattle.⁷⁹ Although these

Agriculture and Trade Policy, National Joint Council of Food Inspection Locals, National Family Farm Coalition, The National Catholic Rural Life Conference, Organic Consumers Assoc., Public Citizen and U.S. Public Interest Research Group to Tommy Thompson, Secretary, U.S. Department of Health and Human Services and Ann Veneman, Secretary, U.S. Department of Agriculture (Apr. 12, 2001) (on file with author) [hereinafter Letter from Animal Welfare Institute et al.] (requesting that the FDA and USDA take immediate action beyond what has already been done to address “mad cow disease,” including an immediate end to human consumption of cattle tissues with high risk for transmitting BSE, an end to loopholes in the regulation of animal feed, significant increases in testing and surveillance, and the withdrawal of support for policies that promote trade regardless of impact on human and animal health).

76. See, e.g., RHODES, DEADLY FEASTS, *supra* note 16, at 229 (“Will BSE come to America? The answer seems to be: it’s already here, in native form, a low-level infection that industrial cannibalism could amplify to epidemic scale.”); *id.* at 224-25 (discussing outbreak of TME in Wisconsin where the mink’s feed included U.S. cattle and not sheep); RAMPTON & STAUBER, *supra* note 28, at 210 (recognizing the insufficiency of the testing for BSE in U.S. cattle to actually uncover the existence of BSE in the United States especially since comparatively few cattle were tested for BSE in Wisconsin where downer cattle are the suspected cause of TME outbreaks); see also Letter from Neal D. Barnard, M.D., President, Physicians Committee for Responsible Medicine, to Ann Veneman, Secretary, U.S. Department of Agriculture and Secretary, U.S. Department of Health and Human Services (Jan. 25, 2001) (on file with author) (“After a 1985 TME outbreak in Stetsonville, Wisconsin, experimenters injected brain tissue from diseased mink into Holstein cattle, finding that the cattle developed spongiform encephalopathy. They then fed remains of these cattle to healthy mink, who soon developed TME.”), available at <http://www.pcrm.org/news/health010124.html>; *Mad Cow Disease: The Risk to the U.S.* (Physicians Committee for Responsible Medicine), at 1 (providing evidence that the conditions that led to the emergence of BSE in Britain have been present in the United States, “evidence suggests that the agent that causes BSE has already spread to at least some animals in the U.S.,” and “between 1979 and 1990, 2,614 Americans died of CJD, and the possibility that BSE played a role in some of those deaths cannot be ruled out.”), available at http://www.pcrm.org/health/Preventive_Medicine/mad_cow_disease.html.

77. See 9 C.F.R. § 94.18 (2001) (restricting the import of meat and ruminant products from known BSE countries, excluding gelatin, milk, and milk products); see also RHODES, DEADLY FEASTS, *supra* note 16, at 223 (discussing the USDA’s 1989 prohibition on the importation of British cattle and zoo ruminants).

78. U.S. FOOD AND DRUG ADMIN., IMPORT ALERT NO. 17-04 (Oct. 19, 1994) (illustrating how bans on bovine products are not extended to dietary supplements), available at http://www.fda.gov/ora/fiars/ora_import_ia1704.html.

79. See, e.g., U.S. DEP’T. OF AGRIC., ANIMAL AND PLANT HEALTH INSPECTION SERVICE, BACKGROUND PAPER ON BOVINE SPONGIFORM ENCEPHALOPATHY (BSE) (Dec. 7, 2000) (“[A]nimal and Plant Health Inspection Service] has had a comprehensive surveillance program in place in the United States (since 1990) to ensure timely

regulations were a step in the right direction, U.S. cattle feed practices remained unchanged and similar to those suspected of causing the British BSE outbreak.⁸⁰

In 1997, more than a year after the British Government admitted a link between BSE and vCJD in humans,⁸¹ the FDA finally issued regulations prohibiting the use of mammalian protein in feed for ruminant animals.⁸² Several concerns have been raised regarding the insufficiency of this ban, including both the continued inclusion of animal protein in feed for naturally vegetarian animals⁸³ and compliance problems within the feed industry.⁸⁴

In addition to animal feed restrictions and recommendations issued to the dietary supplement industry, the FDA has issued import bulletins and import alerts.⁸⁵ The FDA and the USDA's Animal and Plant Health Inspection Service ("APHIS") work with the U.S.

detection and swift response in the unlikely event that an introduction of BSE were to occur."), available at http://www.fas.usda.gov/dlp/BSE/bseback_aphis.html. But see Lurie, *supra* note 4 (criticizing the fact that the USDA in 2000 was testing only about one percent of downer cattle and comparing the 11,954 U.S. cattle tested for BSE over ten years with the 20,000 cattle tested *weekly* in France, a country that has identified BSE in its cattle).

80. See RAMPTON & STAUBER, *supra* note 28, at 215 ("Although Britain began banning animal cannibalism in 1988, the U.S. failed to follow suit for almost a decade, during which time billions of pounds of U.S. cattle were fed back to other cattle."); see also *supra* notes 26-28 and accompanying text (detailing the feed practices responsible for the spread of BSE).

81. See, e.g., 1 THE BSE INQUIRY 1 (2000) (discussing the British Government's March 20, 1996 announcement of the possible link between BSE and vCJD), available at <http://www.bseinquiry.gov.uk>. See generally Substances Prohibited From Use in Animal Food or Feed; Animal Proteins Prohibited in Ruminant Feed, 62 Fed. Reg. 30,936 (June 5, 1997) (releasing regulations over a year after the British Government's announcement).

82. 21 C.F.R. § 589.2000 (Nov. 6, 2001); see *id.* (defining ruminants as "any member of the order of animals which has a stomach with four chambers . . . through which feed passes in digestion. The order includes, but is not limited to, cattle, buffalo, sheep, goats, deer, elk, and antelopes.").

83. See, e.g., Letter from Animal Welfare Institute et al., *supra* note 75 (discussing loopholes in current regulations that threaten the safety of the meat supply because of the continued practice of feeding naturally vegetarian animals animal protein).

84. See *Food Safety: Controls Can Be Strengthened to Reduce the Risk of Disease Linked to Unsafe Animal Feed*, GEN. ACCT. OFF. REP. NO. RCED-00-255, at 11-12 (Sept. 22, 2000) (stating that of 9,100 site visits by FDA and state inspectors to farms producing their own feed as well as feed and rendering plants, close to 1700 of them were not even aware of the regulations and another 2,481 were found to have serious deficiencies, including failure to label products containing ruminant materials and lack of measures to prevent cross-contamination of prohibited and non-prohibited materials), available at <http://www.gao.gov/archive/2000/rc00255.pdf>; see also U.S. Officials Pressure Animal-Feed Makers Amid Mad-Cow Fears, WALL ST. J., Jan. 12, 2001, at B6 ("A summary of inspections released by the Food and Drug Administration shows that many of the companies that process the remains of animals to make animal feed are not following federal regulations that aim to prevent the appearance of mad-cow disease in the U.S.").

85. See Sundlof, *supra* note 15 (listing FDA import alerts and bulletins aimed at BSE prevention).

Customs Service in an effort to prevent harmful products from entering the United States.⁸⁶ In 1992, the FDA issued an import bulletin warning inspectors to check for animal by-products and regulated products containing animal by-products from BSE countries.⁸⁷ Two years later, the FDA took a stronger stance, issuing an import alert calling for the detainment of all *bulk* shipments of high-risk bovine materials from BSE countries.⁸⁸

In January 2001, the FDA released an alert requesting the detainment of animal feed, animal feed ingredients, and other products for animal use that contain animal ingredients from countries with BSE as well as some countries with lower import requirements than the United States.⁸⁹ Less than two months later, the FDA announced the USDA's expanded prohibition on the import "of certain edible ruminant products from Europe, Oman and BSE at-risk countries."⁹⁰ Although the detainment and destruction of high-risk materials from BSE countries could certainly reduce the risk of BSE entering the United States, the FDA actually only inspects one percent of imports that fall under its regulatory power.⁹¹ In addition, the FDA touts import bulletins and alerts as part of its substantial effort to prevent a BSE outbreak in the United States,⁹² but import "[a]lert[s] contain[] guidance to FDA field personnel only. [They do] not establish any requirements, or create any rights or obligations on FDA or on regulated entities."⁹³

86. *See id.* (highlighting interagency cooperation); *see also* OFFICE OF REGULATORY AFFAIRS IMPORTS, U.S. FOOD AND DRUG ADMIN., IMPORT PROGRAM SYSTEM INFORMATION (defining import alerts and bulletins as methods of communicating important information from the FDA to its field offices), *available at* http://www.fda.gov/ora/import/ora_import_system.html (last modified Mar. 17, 1999).

87. *See* U.S. FOOD AND DRUG ADMIN., IMPORT BULLETIN NO. 99-B03 (Sept. 1, 1992) (alerting field officers to be aware of animal products from BSE countries).

88. *See* U.S. FOOD AND DRUG ADMIN., IMPORT ALERT NO. 17-04 (Oct. 19, 1994) (providing guidance to FDA field officials regarding USDA regulations prohibiting the import of bovine materials from BSE-affected countries), *available at* http://www.fda.gov/ora/fiars/ora_import_ia1704.html.

89. *See* Sundlof, *supra* note 15 (citing FDA Import Alert 99-25 issued Jan. 20, 2001).

90. *See id.* (discussing FDA Import Bulletin 99B-14 issued March 1, 2001).

91. *See* Lurie, *supra* note 4 (implying that for dietary supplements the FDA may inspect even less than one percent of all imports); *see also* Ben White, *Food Inspection Reorganization Gains Impetus: After Attacks, Calls Increase for Unifying Agencies' Efforts*, WASH. POST, Oct. 12, 2001, at A31 ("In 2000, for example, FDA inspections covered just 1 percent of imported food under its jurisdiction.").

92. *See* Sundlof, *supra* note 15 (holding import alerts and bulletins out as one of the many substantial steps the FDA is taking to prevent BSE in the United States).

93. U.S. FOOD AND DRUG ADMIN., IMPORT ALERT NO. 17-04 (Oct. 19, 1994), *available at* http://www.fda.gov/ora/fiars/ora_import_ia1704.html.

E. Efforts to Protect U.S. Consumers of Dietary Supplements from BSE

While the U.S. Government has implemented regulations predominantly aimed at protecting the domestic meat supply, the FDA has taken steps, within its power, to protect dietary supplement consumers from BSE.⁹⁴ In 1992, the FDA issued its first letter to the dietary supplement industry requesting that manufacturers not use bovine-derived products from countries known to have BSE.⁹⁵ Compliance by the dietary supplement industry with these FDA recommendations was, and continues to be, voluntary.⁹⁶ The FDA recommendations neither carry penalties for non-compliance, nor provide measures for monitoring compliance.⁹⁷

In 1994, the FDA sent a letter to supplement manufacturers stating the agency did not object to the use of bovine-derived gelatin, even if it had been produced in BSE countries.⁹⁸ In 1997, in light of new information regarding BSE, the FDA retracted this statement, and included gelatin among the ingredients from BSE infected countries it recommended dietary supplement manufacturers avoid.⁹⁹ In November 2000, the FDA sent yet another letter “strongly recommend[ing] that firms manufacturing or importing dietary supplements which contain specific bovine tissues . . . including extracts or substances derived from such tissues, take all steps necessary to assure themselves and the public that such ingredients do not come from cattle born, raised, or slaughtered in countries where BSE exists.”¹⁰⁰

94. See *infra* notes 95-100 and accompanying text (discussing FDA actions to prevent BSE in dietary supplements).

95. See RAMPTON & STAUBER, *supra* note 28, at 150-51 (discussing FDA letters requesting the supplement industry to refrain from using bovine neural or glandular tissue that may be infected with BSE) (citing Letter from Fred R. Shank, Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, to Dietary Supplement Manufacturers (Nov. 9, 1992)).

96. See *id.* (noting the purely advisory nature of FDA recommendations to the supplement industry regarding BSE).

97. See *id.* (explaining that no enforcement measures exists for recommendations).

98. See *Safety of Gelatin, supra* note 48, at 1 (“On August 17, 1994, in a letter to manufacturers, the FDA said recommendations against the use of bovine materials from BSE countries did not extend to gelatin.”).

99. See *id.* (“After hearing the evidence, weighing newer scientific information and thoroughly discussing the issues, the majority of committee members concluded that the exemption of gelatin from BSE countries should not continue.”).

100. Letter from Christine J. Lewis, Ph.D., Director, Office of Nutritional Products, Labeling, and Dietary Supplements, Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, to Manufacturers and Importers of Dietary Supplements and Dietary Supplement Ingredients (Nov. 14, 2000) (on file with author) (specifically including ingredients derived from brain, spinal chord and bone marrow on list of bovine tissues of known infectivity and stating that bovine ingredients not listed posed risk of BSE but levels of infectivity were simply unknown).

Although U.S. feed restrictions have faults,¹⁰¹ they are more effective in the fight against BSE than efforts aimed at dietary supplements.¹⁰² The FDA recommendations made to dietary supplement manufacturers and the import restrictions offer no real protection against the spread of BSE through dietary supplements¹⁰³ because such restrictions impose no legal duty on dietary supplement manufacturers.¹⁰⁴ In addition, the recommendations and import alerts only apply to countries that have detected cases of BSE.¹⁰⁵ This limitation hampers efforts to prevent the spread of BSE because new cases are being discovered in countries previously thought to be free of the disease.¹⁰⁶ Once BSE is discovered in a country, U.S. recommendations and import alerts become applicable,¹⁰⁷ but by that time the cows have been infected with BSE for years because of BSE's long incubation period.¹⁰⁸ As a result of the FDA's limited power, many organizations and scientists remain particularly concerned that BSE will be transmitted through dietary supplements.¹⁰⁹

II. THE FDA'S POWER TO REGULATE DIETARY SUPPLEMENTS

The Federal Food, Drug, and Cosmetic Act of 1938 ("FDCA") delegated to the FDA the power to regulate, among other things,

at the time of writing the letter), *available at* <http://www.cfsan.fda.gov/~dms/dspltr05.html>.

101. *See supra* note 84 (discussing compliance problems with feed restrictions due to ignorance of new regulations and lack of effective sanctions for violations of regulations).

102. *See* 21 C.F.R. § 589.2000 (2001) (providing specific mandatory requirements for feed manufacturers); *see also* *U.S. Officials Pressure Animal-Feed Makers Amid Mad-Cow Fears*, WALL ST. J., Jan. 12, 2001, at B6 (reporting that U.S. officials have begun to threaten harsh penalties if the animal-feed industry fails to comply with federal regulations).

103. *See supra* notes 93-97 and accompanying text (noting that FDA actions constitute only recommendations for the dietary supplement industry and that import efforts are minimal and largely ineffective).

104. *See id.* (discussing the voluntary nature of certain FDA recommendations and import alerts).

105. *See id.* (noting that the FDA focuses on countries with known incidences of BSE).

106. *See, e.g.,* Yamiko Ono, *Asia Reports First Case of Mad-Cow Disease*, WALL ST. J., Sept. 11, 2001, at A18 (reporting that a dairy cow in Japan tested positive for BSE).

107. *See supra* notes 93-97 and accompanying text (discussing applicability of FDA recommendations and import alerts to BSE infected countries).

108. *See supra* note 39 (detailing the long incubation period of all TSEs).

109. *See, e.g.,* Lurie, *supra* note 4 (noting that "dietary supplements were an area of particular concern" in the context of a discussion of the various means by which BSE could enter the country); *Hearing on Mad Cow Disease: Are Our Precautions Adequate? Before Senate Comm. on Commerce*, 107th Cong. (2001) (statement of Caroline Smith DeWaal, Director of Food Safety, Center for Science in Public Interest) (stating that the National Nutritional Foods Association is urging its members to eliminate all cow neurological tissues from their dietary supplements).

food.¹¹⁰ The FDCA included the first definition of dietary supplements as a category of food for special dietary use and required that manufacturers label supplements with content information including the amount of vitamins, minerals, and other properties.¹¹¹ Despite the authority conferred on the FDA under the FDCA, the agency repeatedly failed at attempts to implement restrictive regulations aimed at dietary supplements.¹¹² The FDA's failed attempts to regulate dietary supplement manufacturers, nevertheless, slowed and prevented production of a wide-range of products for many years.¹¹³ In response, Congress amended the FDCA by enacting DSHEA to prevent the FDA from excessively regulating dietary supplements and thereby from limiting consumer access.¹¹⁴

A. *The Struggle that Lead to DSHEA's Enactment*

The FDA issued its first regulations relating to dietary supplements in 1941.¹¹⁵ These early regulations focused on labeling vitamins and minerals and established minimum daily requirements ("MDR") for certain supplements.¹¹⁶ Initial regulatory actions met with little resistance from the courts,¹¹⁷ the dietary supplement industry, or consumers.¹¹⁸

In 1962, the FDA attempted to revise its 1941 dietary supplement regulations, reasoning the 1941 regulations were outdated¹¹⁹ and that

110. Federal Food, Drug and Cosmetic Act, ch. 375, 52 Stat. 1040 (1938) (codified as amended at 21 U.S.C. §§ 301-397 (2001)).

111. See I. SCOTT BASS & ANTHONY L. YOUNG, DIETARY SUPPLEMENT HEALTH AND EDUCATION ACT: A LEGISLATIVE HISTORY AND ANALYSIS 9 (1996) (discussing the emergence of vitamins and their initial inclusion in the FDCA in 1938 as well as the first attempts at regulating dietary supplements).

112. See *infra* Part II.A (outlining FDA attempts to regulate dietary supplements).

113. See *infra* notes 159-65 and accompanying text (illustrating how FDA regulatory attempts hindered dietary supplement production).

114. See *infra* Part II.A-B (identifying the reasons behind the enactment of DSHEA and its effects).

115. 21 C.F.R. § 125 (1941) (establishing first guidelines for regulating dietary supplements under the FDCA).

116. See *id.* (setting minimum daily requirements for vitamins A, B, C and D and minerals calcium, phosphorus, iron and iodine and setting general label requirements for vitamins and minerals).

117. See BASS & YOUNG, *supra* note 111, at 9-10 (citing cases where the courts predominantly sided with the FDA in its decision to regulate dietary supplements as drugs due to health claims made in product labeling and accompanying literature). These decisions and enforcement policies would eventually lead to industry and consumer dissatisfaction. *Id.* at 11.

118. See *id.* at 11 (recognizing that consumer complaints began to mount only after advances in scientific knowledge indicated that the minimum daily requirements established in 1941 were outdated).

119. See Notice of Proposal to Revise Regulations, 27 Fed. Reg. 5815 (proposed June 20, 1962) (proposing to make only minor changes to regulations but recognizing the need to make major changes in order to keep consumers informed

case-by-case regulation was impractical.¹²⁰ In addition, the FDA believed consumers were misinformed regarding the nutritional value of the U.S. food supply and the effectiveness of supplements.¹²¹ Among other provisions, the regulations set minimum and maximum potency levels, forbidding manufacturers from producing supplements containing less than 50% or more than 150% of the recommended daily allowance (“RDA”).¹²² The proposed regulations also prohibited including in supplements ingredients not recognized by “competent authorities” as essential or as having significant nutritive value to humans.¹²³ These proposed regulations sparked

of scientific advances); *see also* William W. Goodrich, Asst. General Counsel for FDA, *The Coming Struggle Over Vitamin-Mineral Pills*, 20 BUS. LAW. 145 (1964) (“The old regulations now are obsolete by any standards . . . [t]hey were prepared at a time when the promotion of vitamin-mineral supplements was in its infancy”).

120. *See* Mark A. Kassel, *From A History of Near Misses: The Future of Dietary Supplement Regulation*, 49 FOOD DRUG L.J. 237, 254-55 (1994) (discussing the FDA’s view that regulation of dietary supplements on a case-by-case basis by bringing actions against manufacturers for labeling claims was impractical and a misuse resources).

121. *See* Goodrich, *supra* note 119, at 146-47 (identifying sources of consumer confusion and a need to correct the lack of consumer knowledge). Goodrich notes that consumers were confused because: minimum daily requirements on labels gave consumers the impression that more than the daily minimum would be better for their health; many supplements contained combinations of ingredients with no rational health benefits; formulations containing ingredients with no evidence of nutritional benefits. *Id.* Goodrich also pointed to the following four nutrition myths as reason for implementing new regulations:

- (a) that our soils are so depleted that ordinary foods do not contain the expected nutrients;
- (b) that modern processing and storage of foods strips them of virtually all important nutritive values;
- (c) that it is essentially impossible to obtain from our daily diets the nutrients we require;
- (d) and that as a result almost every one is now or will soon be suffering from a sub-clinical nutritional deficiency

Id. at 147.

122. *See* Dietary Foods, 31 Fed. Reg. 8521, 8522 (June 18, 1966) (defining RDA, established by the National Academy of Sciences-National Research Council, as representative of the daily intake deemed adequate for maintaining good nutrition in the U.S. population); *see also* Notice of Proposal to Revise Regulations, 27 Fed. Reg. 5815, 5817 (June 20, 1962) (establishing an appropriate range of the RDA for vitamins and minerals considered essential); Goodrich, *supra* note 119, at 149 (summarizing the proposed regulations as allowing marketing of those vitamins and minerals for which there is an established need in human nutrition and restricting the amounts to be included in supplements from one-half to one and one-half times the RDA). Most nutritionists recognize the value to health of consuming vitamins and minerals at levels well above the RDA. *See* JAMES F. BALCH, M.D. & PHYLLIS A. BALCH, C.N.C., *PRESCRIPTION FOR NUTRITIONAL HEALING* 6 (2d ed. 1997) (recommending over 3000% of the recommended daily intake for vitamin C for the maintenance of good health); *see also* SHARI LIEBERMAN, PH.D. & NANCY BRUNING, *THE REAL VITAMIN & MINERAL BOOK: USING SUPPLEMENTS FOR OPTIMUM HEALTH* 127 (2d ed. 1997) (suggesting one use, daily, between five and 50 times the recommended daily vitamin C intake).

123. *See* Dietary Foods, 31 Fed. Reg. 8521, 8522 (June 18, 1966) (recognizing only a limited number of vitamins and minerals as essential or nutritive and limiting the category even further by recognizing the essentiality of certain vitamins and minerals, e.g., vitamin E, magnesium, and zinc, but finding no evidence that the ordinary diet

one of the largest public responses ever received to a proposed rulemaking.¹²⁴ A public hearing was never held and no final regulations were ever published,¹²⁵ but a long battle had begun; the FDA trying to establish new regulations began struggling against consumers and the dietary supplement industry, who would resist each new regulatory attempt.¹²⁶

On June 18, 1966, the FDA again tried to implement new regulations for dietary supplements.¹²⁷ The proposed regulations again suggested limiting the amount of vitamins or minerals contained in a supplement to amounts close to the RDA.¹²⁸ In an effort to dispel myths concerning the nutritional value of the U.S. food supply,¹²⁹ the 1966 regulations would have required all dietary supplements to include the following statement displayed prominently on the package:

Vitamins and minerals are supplied in abundant amounts by the foods we eat. The Food and Nutrition Board of the National Research Council recommends that dietary needs be satisfied by foods. Except for persons with special medical needs, there is no scientific basis for recommending routine use of dietary supplements.¹³⁰

As a result of public objections, the proposed regulations were stayed one day before they were to go into effect.¹³¹ The notice

requires supplementation of these essential nutrients and as a result concluding that their sale was not warranted except in limited situations).

124. See Goodrich, *supra* note 118, at 145 (placing the count of responses to the June 20, 1962 proposed regulations at 54,102 letters).

125. See *id.* at 146 (suggesting that the proposed regulations never made it through revisions after the public comment period or to public hearings and final order because the agency had to focus its efforts on carrying out its responsibilities to drug regulations under the newly enacted Kefauver-Harris Drug Amendments of 1962).

126. See *infra* notes 127-206 and accompanying text (describing the struggles between the FDA and Congress, dietary supplement manufacturers, and consumers).

127. See Dietary Foods, 31 Fed. Reg. 8521, 8521-27 (proposed June 18, 1966) (attempting to revise the regulations for food for special dietary uses).

128. See *id.* at 8523 (trying again to restrict the amounts of vitamins and minerals included in supplements). In addition, the regulations suggested prohibiting supplement labels from listing ingredients not recognized by the FDA as having any significant value to human nutrition because the presence of such ingredients on the label might mislead consumers by implying that such ingredients have nutritive properties solely by the ingredients presence on the label alongside vitamins and minerals of known nutritional value. *Id.*

129. See *supra* note 121 and accompanying text (highlighting the FDA's belief that consumer myths about nutrition made new regulations of dietary supplements necessary).

130. Dietary Foods, 31 Fed. Reg. 8521, 8525 (proposed June 18, 1966).

131. See Order Staying the Effective Date of Regulations; Amending Regulations; and Allowing Additional Time for Filing Objections, 31 Fed. Reg. 15,730 (Dec. 14, 1966) (noting that objections to the June 1966 proposed regulations were filed as well as requests for a public hearing).

staying the regulations also amended “in certain minor respects” the prior released regulations.¹³² An effective date was permanently stayed until public hearings could be held.¹³³

Public hearings began on June 20, 1968, and continued for close to two years, ending May 14, 1970.¹³⁴ The FDA considered the years of hearings and the Hearing Examiner’s report before publishing proposed rule making in January 1973.¹³⁵ Finalized regulations were published in August 1973,¹³⁶ to take full effect on January 1, 1975.¹³⁷ While the FDA maintained its stance that scientific evidence did not indicate a need for individuals to supplement their diet, it removed the previously proposed mandatory labeling requirement.¹³⁸ Besides this change, the new regulations included most of the same proposals that had sparked protests in the past.¹³⁹

Once again the public and industry responses were numerous and overwhelmingly negative.¹⁴⁰ In *National Nutritional Foods Ass’n v.*

132. *See id.* at 15,732 (retaining the substance of the original regulations but amending the wording of certain provisions for example, replacing the statement required to be prominently displayed on supplement labels with a shorter and less authoritative version reading: “Vitamins and minerals are supplied in abundant amounts by commonly available foods. Except for persons with special medical needs, there is no scientific basis for recommending routine use of dietary supplements.”).

133. *See id.* at 15,730 (listing the issues raised by the objections which led to the permanent stay).

134. *See* Definition, Identity, and Label Statements; Proposed Findings of Fact, Conclusions, and Tentative Order Following a Public Hearing, 38 Fed. Reg. 2152, 2153 (proposed Jan. 19, 1973) (outlining hearings that led to 1973 proposed rule making).

135. *See id.* (indicating that the FDA took the Congressional hearings and subsequent reports into consideration in creating the newly proposed rules).

136. *See* Dietary Supplements of Vitamins and Minerals, 38 Fed. Reg. 20,730, 20,731 (Aug. 2, 1973) (concluding that the over 20,000 objections filed to the January proposal provided no substantive reasons for changing the proposed regulations and also concluding “that the establishment of a standard of identity is necessary to insure that *rational* dietary supplements, containing essential vitamins and minerals at proper levels and in *scientifically justified combinations*, are provided to the consumer”) (emphasis added).

137. *See id.* (proposing the new rules on dietary supplements on Aug. 2, 1973 and reporting that the rules were to become fully effective Jan. 1, 1975).

138. *See supra* note 130 and accompanying text (quoting labeling requirement later removed).

139. *See* Dietary Supplements of Vitamins and Minerals, 38 Fed. Reg. 20,730, 20,737-740 (Aug. 2, 1973) (reiterating the January proposed regulations); *see also* Dietary Supplements of Vitamins and Minerals, 38 Fed. Reg. 2152, 2157 (Jan. 19, 1973) (discussing the belief that any supplement exceeding 150 percent of the RDA was appropriate only for the treatment of those suffering from deficiencies or for some other medical purpose); *id.* (restricting “nutritionally irrational” combinations of vitamins and minerals as defined by those “provid[ing] quantitative combinations or nutrients for which no human individual need could possibly exist, if the products are used only as dietary supplements”).

140. *See* Dietary Supplements of Vitamins and Minerals, 38 Fed. Reg. 20,730 (Aug. 2, 1973) (listing and detailing the nearly 22,000 responses to the January 1973

FDA,¹⁴¹ fifteen petitions to review the FDA regulations were considered.¹⁴² The U.S. Court of Appeals for the Second Circuit found that, while it was not arbitrary or unreasonable for the FDA to set 50 and 150 percent as lower and upper potency limits, the FDA's regulations concerning its upper limit should be more flexible to account for new scientific knowledge about the benefits of higher doses.¹⁴³ The Second Circuit also noted that for combinations that are not likely to cause consumer confusion, the FDA should approve exceptions to its combination restrictions.¹⁴⁴ For these reasons, the Second Circuit stayed the effectiveness of the FDA's proposed regulations.¹⁴⁵ Despite staying the effective date, the Court sustained the FDA's regulations, but for a few minor changes.¹⁴⁶

In response to an overwhelming number of constituent letters written to Congress, nearly seventy bills were introduced in an effort to restrict the FDA's authority to limit the potency of vitamins and

proposed rulemaking); *see also* Kassel, *supra* note 120, at 256-57 (indicating that special interest groups sent more than one million letters to Congress urging legislation to stop FDA regulation of dietary supplements); Kassel, *supra* note 120, at 257 n.155 (stating that one Congress person received more mail regarding dietary supplement regulation attempts than about Watergate) (citing CHARLES W. MARSHALL, VITAMINS AND MINERALS: HELP OR HARM? (1985)).

141. 504 F.2d 761 (2d Cir. 1974).

142. *See id.* at 767-68 (reviewing the FDA's proposed rulemaking to determine if it was reasonable and not an arbitrary interpretation of the statute).

143. *See id.* at 783-84 (expressing the opinion that the FDA had not gone far enough to provide higher potency levels for those vitamins that are widely recognized as beneficial in higher doses, noting the common practice of consuming vitamin C in doses of 500 milligrams, and rejecting the notion that consumers should be forced to purchase five or six times as many vitamin C supplements in order to get the same amount of vitamin C).

144. *See id.* (finding it difficult to agree that combining various vitamin B's into a complex would increase consumer confusion and rejecting the idea that consumers should be required to purchase bottles of each vitamin B, individually, to receive the desired intake of the various B vitamins).

145. *See id.* at 785 (staying the FDA regulations in their entirety until June 30, 1975 or six months after a final judgment whichever came later, in order to allow manufacturers time to petition the FDA for increases in the upper level potency limits and for variations of combination requirements).

146. *See id.* at 786 (sustaining the regulations in a broad sense, but seeing no reason to exclude two vitamins and six minerals, which the regulations recognized as essential to human nutrition, from supplements simply because no RDA had been established). The court also disagreed with the FDA's statements that no known nutritional use existed for vitamins or minerals in excess of 150% of the RDA and consequent classification of such supplements as drugs. *Id.* at 789. The court recognized known nutritional benefits for vitamins and minerals in excess of the RDA, such as the greater need for vitamin C among women who use oral contraceptives. The court, therefore, stated that the FDA should classify vitamins in excess of the 150% of the RDA as drugs based solely on the assumption that vendors intended such supplements be used for therapeutic purposes. *Id.* Stating, however, that properly labeled high-dose supplements should be classified as over-the-counter drugs. *Id.*

minerals.¹⁴⁷ Following three years of debate, Congress enacted the Health Research and Health Services Amendments of 1976,¹⁴⁸ more commonly referred to as the Proxmire/Rogers Amendment.¹⁴⁹ The Proxmire/Rogers Amendment addressed consumer and industry concerns by amending the FDCA to prevent the FDA from setting “maximum limits on the potency of any synthetic or natural vitamin or mineral.”¹⁵⁰ The Proxmire/Rogers Amendment also prohibited the FDA from “classify[ing] any natural or synthetic vitamin or mineral . . . as a drug solely because it exceeds the level of potency which the [FDA] determines . . . nutritionally rational or useful.”¹⁵¹ Finally, it prevented the FDA from restricting the combinations and numbers of vitamins and minerals included in supplements.¹⁵²

While the Proxmire/Rogers Amendment appeared to hinder the FDA’s ability to arbitrarily regulate dietary supplements,¹⁵³ the FDA found other regulatory approaches.¹⁵⁴ The FDA changed its enforcement focus from potency and combinations of ingredients to the classification of supplements as food additives.¹⁵⁵ Underlying the FDA’s theory was the notion that vitamins and minerals could be classified as food additives simply because they were added to capsules, tablets, or other vitamins and minerals.¹⁵⁶ Although the FDA was forced to regulate with some restraint by the Proxmire/Rogers Amendment,¹⁵⁷ the classification of supplements as food additives provided the FDA with an easy method for keeping

147. See BASS & YOUNG, *supra* note 111, at 12 (outlining the legislative response to FDA’s proposed regulations).

148. See Pub. L. No. 94-278, § 501(a), 90 Stat. 401, 410 (1976) (amending, among others, the FDCA).

149. See, e.g., S. REP. NO. 103-410, at 15 (1994) (referring to the 1976 Amendment of the FDCA as the Proxmire/Rogers Amendment).

150. 21 U.S.C. § 350(a)(1)(A) (1994).

151. 21 U.S.C. § 350(a)(1)(B) (1994).

152. See 21 U.S.C. § 350(a)(1)(C) (1994) (stating that the FDA “may not limit . . . the combination or number of any synthetic or natural-(i) vitamin, (ii) mineral, or (iii) other ingredient or food”).

153. See *supra* notes 150-52 and accompanying text (highlighting the most significant changes to the FDCA that resulted from the Proxmire/Rogers Amendment, and as a corollary, noting the subsequent restrictions on the FDA).

154. See BASS & YOUNG, *supra* note 111, at 14 (discussing the FDA’s change in regulatory approaches following the 1976 amendment of the FDCA).

155. See, e.g., *id.* (recognizing the “food additive” enforcement approach adopted by the FDA after 1976); S. REP. NO. 103-410, at 15 (1994) (detailing the FDA’s “food additive theory” approach to supplement regulation in the late 1970s).

156. See, e.g., S. REP. NO. 103-410, at 15 (1994) (outlining the FDA’s attempts to circumvent statutory schemes aimed at preventing arbitrary dietary supplement regulation).

157. See, e.g., *FDA Regulation of Dietary Supplements*, GEN. ACCT. OFF. REP. NO. HRD-93-28R (July 2, 1993), reprinted in BASS & YOUNG, *supra* note 111, at 297 (“[FDA] officials said that the FDA has not systematically regulated [vitamins and mineral] since the 1976 enactment of the Proxmire/Rogers amendment”).

targeted supplements off the market.¹⁵⁸ The FDCA defines food additives as substances that have an affect on foods and which are not generally recognized as safe.¹⁵⁹ Once classified as a food additive, products are subject to pre-market approval by the FDA.¹⁶⁰

In the 1970s and 1980s, the FDA only had to provide testimony from one expert witness that a food additive was not generally recognized as safe in order to prevent a product from reaching the market or to remove a product from the shelf.¹⁶¹ This method proved burdensome for dietary supplement manufacturers because the approval of food additive petitions takes from two to six years and costs as much as two million dollars.¹⁶² In effect, manufacturers were discouraged from producing new products and as a result consumer access to dietary supplements was hindered.¹⁶³ The FDA had found a way to regulate dietary supplements, but enforcement was still occurring on a case-by-case basis.¹⁶⁴

Another issue impacting dietary supplement regulation arose in

158. See *infra* notes 160-62 and accompanying text (discussing the time and costs involved in getting safety approval for food additives and the small amount of evidence needed by the FDA to prove a food additive not generally recognized as safe).

159. See 21 U.S.C. § 321(s) (1994) (defining food additive as “any substance . . . becoming a component or otherwise affecting the characteristics of any food . . . if such substance is not generally recognized, among experts qualified by scientific training and experience to evaluate its safety, as having been adequately shown through scientific procedures . . . to be safe under the conditions of its intended use”).

160. See 21 U.S.C. § 348 (1994) (outlining the process for receiving pre-market approval for food additives).

161. See BASS & YOUNG, *supra* note 111, at 44 (recognizing the ease with which the FDA could establish a substance as generally unsafe) (citing *United States v. An Article of Food*, 678 F.2d 735, 740 (7th Cir. 1982) (accepting the testimony of five FDA scientists that a disputed ingredient was unsafe over a corporate expert who testified the ingredient was generally recognized as safe)); see also S. REP. NO. 103-410, at 15 (1994) (“Under this theory, the FDA could not lose, as it needed only to furnish an affidavit from one of its scientists stating that experts generally did not regard the product as safe. The actual safety of the product was never at issue.”).

162. See S. REP. NO. 103-410, at 21 (1994) (indicating the amendment to Section 402 was made necessary by the regulatory actions of the FDA). The report also stated the FDA was acting in opposition to court decisions describing the action of the FDA as an “Alice-in-Wonderland approach . . . to allow the FDA to make an end-run around the statutory scheme”. See *United States v. Traco Labs*, 984 F.2d 814 (7th Cir. 1993).

163. See S. REP. NO. 103-410, at 21-22 (1994) (discussing the reasons for switching the burden of proving a dietary supplement adulterated to the FDA, because of the unfair hardship that limited consumer access under the food additive regulatory approach).

164. See BASS & YOUNG, *supra* note 111, at 14 (describing the enforcement process under the “food additive theory” as one in which the FDA brings cases against individual manufacturers and not one in which it issues regulations applicable to all supplement manufacturers); see also *supra* note 120 and accompanying text (referring to one of the FDA’s motives for establishing regulations, namely the inefficiency of case-by-case enforcement).

the late 1980s, namely the ability of dietary supplement manufacturers and vendors to make health claims¹⁶⁵ for their products.¹⁶⁶ Historically, dietary supplements were classified as drugs if the label or certain promotional materials¹⁶⁷ made such claims.¹⁶⁸ In 1987, the FDA proposed regulatory changes that would allow food labeling to make certain limited claims regarding a products potential health benefits.¹⁶⁹ The regulations stated that all foods would be subject to the same regulatory criteria,¹⁷⁰ but the regulations

165. See 21 U.S.C. § 343(r)(1)(B) (1994) (defining health-related claims as claims made in the labeling of a food product that characterize the relationship of the product to a disease or health-related condition); see also Labeling; General Requirements for Health Claims for Food, 56 Fed. Reg. 60,537, 60,563 (Nov. 27, 1991) (“Health claim means any claim made on the label or in labeling of a food, including a dietary supplement, that expressly or by implication, including ‘third party’ endorsements, written statements, . . . symbols, . . . or vignettes, characterizes the relationship of any substance to a disease or health-related condition.”).

166. See *infra* notes 167-84 (discussing another struggle against the FDA regarding dietary supplements). See generally Food Labeling; Public Health Messages on Food Labels and Labeling, 52 Fed. Reg. 28,843 (proposed Aug. 4, 1987) (to be codified at 21 C.F.R. pt. 101) (proposing changes to FDA regulations, allowing health messages on food labels without classifying the food as a drug).

167. See Food Labeling; Public Health Messages on Food Labels and Labeling, 52 Fed. Reg. 28,843, 28,844-845 (proposed Aug. 4, 1987) (to be codified at 21 C.F.R. pt. 101) (“[T]he intended use of a product may be determined from its ‘label, accompanying labeling, promotional material, advertising and any other relevant source.’” (quoting *United States v. An Article . . . Consisting of 216 Bottles, More or Less, . . . Sudden Change*, 409 F.2d 734, 739 (2d Cir. 1969))); see also *id.* (citing other cases that held radio broadcast, brochures, magazine reprints, books, pamphlets and written advertisements as promotional materials) (citing *United States v. Articles of Drug . . . Neptune*, No. C-83-0864 (N.D. Cal., Oct. 25, 1983); *United States v. Articles of Drug, Etc.*, 263 F. Supp. 212, 215 (D. Neb. 1967); *United States v. Articles of Drug, Foods Plus, Inc.*, 239 F. Supp. 465 (D.N.J. 1965), *aff'd*, 362 F.2d 923 (3d Cir. 1966)).

168. See Food Labeling; Public Health Messages on Food Labels and Labeling, 52 Fed. Reg. 28,843, 28,844 (proposed Aug. 4, 1987) (to be codified at 21 C.F.R. pt. 101) (analyzing the FDCA and FDA regulations that led to the classification of foods as drugs when labels made health claims or when materials associated with the product indicated an intent of manufacturer or vendor for the product to be used as a drug); 21 U.S.C. § 321(g)(1)(B) (1994) (defining drugs as “articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man . . .”); 21 C.F.R. § 101.9(i) (1994) (providing that food will be deemed misbranded “if its labeling represents, suggests, or implies: (1) that the food because of the presence or absence of certain dietary properties is adequate or effective in the prevention, cure, mitigation, or treatment of any disease or symptom.”); Food Labeling; Public Health Messages on Food Labels and Labeling, 52 Fed. Reg. 28,843, 28,845 (proposed Aug. 4, 1987) (to be codified at 21 C.F.R. pt. 101) (acknowledging the improbability of any food product meeting the requirements necessary for approval as a drug and the historical discouragement of the health claims by food manufacturers).

169. See Food Labeling; Public Health Messages on Food Labels and Labeling, 52 Fed. Reg. 28,843 (proposed Aug. 4, 1987) (to be codified at 21 C.F.R. pt. 101) (identifying the increasing awareness by consumers of the connection between diet and health and subsequently the increased interest of food manufacturers in providing a means of informing consumers of how their products contribute to diet and health).

170. See *id.* at 28,846 (stating “[t]he agency will apply the same criteria to dietary

were biased against dietary supplements, indicating dietary supplements would have difficulty meeting the necessary criteria.¹⁷¹ The FDA's reluctance to acknowledge the health benefits that dietary supplements provide to the general population, explicitly stated in the 1987 proposed rules,¹⁷² remained implicit in the Agency's 1990 proposal, which recognized the health benefits of dietary supplements, but only for individuals requiring "special nutrient[s]."¹⁷³

Around the same time, Congress amended the FDCA to include the Nutrition Labeling and Education Act of 1990 ("NLEA").¹⁷⁴ NLEA set standards for regulating health claims for all foods except dietary supplements,¹⁷⁵ and directed the FDA to create standards for dietary supplements.¹⁷⁶ In addition, the NLEA instructed the FDA to investigate specific diseases and whether health claims for these diseases could be attributed to specific dietary supplements and other foods.¹⁷⁷

supplements" as to other foods).

171. *See id.* ("[T]he available scientific information and data regarding good nutrition and health referred to in this notice focus primarily on the role of traditional foods, not dietary supplements."); *id.* ("[A]lthough the agency will apply the same criteria to the labeling of dietary supplements, it may be more difficult for dietary supplements to meet the criteria."); Food Labeling; Health Messages and Label Statements; Reproposed Rule, 55 Fed. Reg. 5176, 5187 (proposed Feb. 13, 1990) (to be codified at 21 C.F.R. pt. 101) (addressing comments received by the FDA that "contended that the statement [of the 1987 proposed regulations] reflect[ed] an alleged bias against dietary supplements and presume[d] that label statements are inappropriate for dietary supplements").

172. *See* Food Labeling; Public Health Messages on Food Labels and Labeling, 52 Fed. Reg. 28843, 28846 (proposed Aug. 4, 1987) (to be codified at 21 C.F.R. pt. 101) (expressing doubt that health claims for dietary supplements would ever be approved).

173. Food Labeling; Health Messages and Label Statements; Reproposed Rule, 55 Fed. Reg. 5176, 5187 (proposed Feb. 13, 1990) (to be codified at 21 C.F.R. pt. 101) ("FDA recognizes the validity of the concern about over ingestion of dietary supplements and also recognizes the fact that dietary supplements *can* be beneficial for *some* consumers with special nutrient requirements.") (emphasis added).

174. Pub. L. No. 101-535, 104 Stat. 2353 (1990) (codified at 21 U.S.C. §§ 301 note, 321, 337, 343, 343 notes, 343-1, 343-1 note, 345, 371).

175. *See* Nutrition Labeling and Education Act of 1990, Pub. L. No. 101-535, § 403(r)(3)(B)(i), 104 Stat. 2353, 2359 (1990) (codified at 21 U.S.C. § 343(r)(3)(B)(i)) (ordering claims allowed only if from "the totality of publicly available scientific evidence (including evidence from well-designed studies conducted in a manner which is consistent with generally recognized scientific procedures and principles), that there is significant scientific agreement, among experts qualified by scientific training and experience to evaluate such claims, that the claim is supported by such evidence").

176. *See* Nutrition Labeling and Education Act of 1990, Pub. L. No. 101-535, § 403 note (1)(A)(x), 104 Stat. 2353, 2361 (1990) (codified at 21 U.S.C. § 343 note) (differentiating standards for dietary supplements from those established for other food products by ordering the FDA to establish procedures and standards for establishing valid health claims for supplements).

177. *See id.* (directing the FDA to determine whether it would be appropriate to

In 1991, the FDA responded with proposed rules that stated that dietary supplements would be subject to the standards created for other foods as structured by the NLEA.¹⁷⁸ While recognizing that the primary author of NLEA, Senator Orrin Hatch,¹⁷⁹ envisioned the creation of more lenient standards for dietary supplements than for other foods,¹⁸⁰ the FDA relied on statements made by other members of Congress recognizing the flexibility and discretion the NLEA provided the FDA in creating standards for dietary supplements.¹⁸¹ In response to its investigation into the specific health claims set forth in NLEA, the FDA approved health claims for calcium and its relationship to osteoporosis,¹⁸² but refused to approve any additional health claims citing a lack of scientific agreement.¹⁸³ In addition to declining to approve health claims for all supplements except calcium, regulations proposed by the FDA implied that herbal remedies would not qualify for approved health claims in the

allow health claims on dietary supplements for the following nutrients in relation to the following specific diseases: “folic acid and neural tube defects, antioxidant vitamins and cancer, zinc and immune function in the elderly, and omega-3 fatty acids and heart disease”); *see also id.* (instructing the FDA to determine whether health claims for “calcium and osteoporosis, dietary fiber and cancer, lipids and cardiovascular disease, lipids and cancer, sodium and hypertension, and dietary fiber and cardiovascular disease” met the requirements established by NLEA).

178. *See* Labeling; General Requirements for Health Claims for Food, 56 Fed. Reg. 60,537, 60,539 (Nov. 27, 1991) (“FDA is proposing the same scientific standard for dietary supplements of vitamins, minerals, herbs, and other similar nutritional substances as for all other foods.”).

179. *See id.* at 60,540 (acknowledging Senator Hatch as “one of the primary authors” of NLEA).

180. *See id.* (“By their very nature, dietary supplements must be marketed so that the consumer is informed of the health or disease-prevention benefits that may be conferred. Greater flexibility is thus required to permit communication of these benefits. This increased regulatory flexibility is also mandated by the very rapid pace of scientific advances . . . linking the prevention of long-term disease to improved nutritional supplementation. For these reasons, a more lenient standard for dietary supplement[s] is envisioned.”) (quoting Senator Orrin Hatch).

181. *See id.* (quoting statements by members of both the Senate and the House in which members note that NLEA provides the FDA flexibility to set standards and that the FDA could adopt standards similar to those created by Congress for other foods).

182. *See* Labeling; General Requirements for Health Claims for Food, 56 Fed. Reg. 60,537, 60,697 (proposed Nov. 27, 1991) (to be codified at 21 C.F.R. pts. 20 and 101) (finding “significant scientific agreement” about the beneficial impact of calcium on bone health).

183. *See id.* at 60,610-672 (rejecting the use of health claims for folic acid, antioxidants, zinc and omega-3); *see also* Food Labeling; Health Claims and Label Statements; Folate and Neural Tube Defects, 58 Fed. Reg. 53,254 (proposed Oct. 14, 1993) (to be codified at 21 C.F.R. pt. 101) (proposing a health claim for folic acid in relation to neural tube defects be approved). *But see* Food Labeling; Health Claims and Label Statements; Folate and Neural Tube Defects, 59 Fed. Reg. 433, 433 (proposed Jan. 4, 1994) (codified at 21 C.F.R. § 101.79) (announcing effective date of July 1, 1994 for regulations approving folic acid health claim); S. REP. NO. 103-410, at 15-16 (1994) (noting that FDA approved health claim for folic acid only after “intense public pressure”).

future.¹⁸⁴

By refusing to treat dietary supplements more leniently than food, approve most health claims, and consider health claims for herbs, the FDA's 1991 proposed rules strengthened the movement to stop the FDA from restricting consumer access to dietary supplements and nutritional information.¹⁸⁵ Congress, responding once again to industry and consumer concerns,¹⁸⁶ enacted the Dietary Supplement Act of 1992 ("DSA").¹⁸⁷ DSA prohibited the 1991 FDA proposed regulations from going into effect before December 1993,¹⁸⁸ "provid[ing] time for the Congress, U.S. Department of Health and Human Services, consumer groups, industry, and other affected parties to identify more fully and to consider the public health issues associated with use of dietary supplements, and to develop a comprehensive approach for reforming the regulation of dietary supplements."¹⁸⁹

The FDA responded to DSA by issuing an advanced notice of proposed rulemaking ("ANPR")¹⁹⁰ relating not to health claims, but to FDA concerns regarding the safety and regulation of dietary supplements.¹⁹¹ In addition to DSA, the FDA cited the growth of the

184. See Labeling; General Requirements for Health Claims for Food, 56 Fed. Reg. 60,537, 60,542-543 (proposed Nov. 27, 1991) (to be codified at 21 C.F.R. pts. 20 and 101) (limiting the definition of dietary supplements to include only components of nutritive value, referring directly to herbs as predominantly non-nutritive, and thereby indicating a stance against allowing health claims for herbs in the future).

185. See BASS & YOUNG, *supra* note 111, at 17 (suggesting that DSHEA might not have emerged had the FDA not published the 1991 proposed rules and noting that the dietary supplement industry rallied together against FDA restrictions); see also Margaret Gilhooley, *Herbal Remedies and Dietary Supplements: The Boundaries of Drug Claims and Freedom of Choice*, 49 FLA. L. REV. 663, 679 (1997) (recognizing the FDA's refusal to approve health claims for dietary supplements as a "push" toward passing DSHEA).

186. See 138 CONG. REC. H12,597 (daily ed. Oct. 8, 1992) (statement of Rep. Waxman) (expressing the desire for public access to information regarding health benefits of dietary supplements).

187. Dietary Supplement Act of 1992, Pub. L. No. 102-571, §§ 201-206, 106 Stat. 4491, 4500-05 (1992).

188. See Dietary Supplement Act of 1992, Pub. L. No. 102-571 § 202(a)(1), 106 Stat. 4491, 4500 (1992) ("The [FDA] may not implement the Nutrition Labeling and Education Act of 1990 . . . or any amendments made by such Act, earlier than December 15, 1993, with respect to dietary supplements of vitamins, minerals, herbs, or other similar nutritional substances.").

189. 138 CONG. REC. H12,597 (daily ed. Oct. 8, 1992) (statement of Rep. Waxman).

190. See Regulation of Dietary Supplements, 58 Fed. Reg. 33,690 (proposed June 18, 1993) (to be codified at 21 C.F.R. ch. 1) (citing DSA as a "significant factor" in compelling the FDA to reexamine its regulation of dietary supplements).

191. See *id.* (indicating FDA's agenda of reviewing dietary supplement regulations and "the agency's intention to bring amino acid-containing dietary supplement products into compliance with the law").

dietary supplement industry,¹⁹² increased availability of dietary supplements¹⁹³ and two outbreaks of public health concern¹⁹⁴ as necessitating the review and change of dietary supplement regulations.¹⁹⁵ The ANPR provided that once again the FDA's position that vitamins and minerals should be limited to a certain percentage of the RDA because of concerns regarding toxicity.¹⁹⁶ The FDA further expressed its belief that many amino acids were being marketed illegally both because of their status as unapproved food additives, which were not generally recognized as safe, or as drugs based on therapeutic claims.¹⁹⁷ Finally, the ANPR stated that herbs were subject to regulation as food additives and that even herbs generally recognized as safe were only recognized as safe in small amounts in contrast to the levels being used in supplements.¹⁹⁸ The FDA also noted that many herbal supplements on the market were not in compliance with the law because they were being marketed for drug uses without complying with drug regulations.¹⁹⁹

The dietary supplement industry and many consumers viewed the ANPR as both an indication that the FDA planned to return to its prior regulatory methods of restricting potencies of vitamins and minerals and as a reiteration of the FDA's intent to increase case-by-case regulation of supplements as food additives and drugs.²⁰⁰ While

192. *See id.* (noting an increase in the public's interest in the effects of vitamins, in the amino acid market and in the herbal market).

193. *See id.* (discussing the greater availability of dietary supplements that "are now readily obtainable at grocery stores, drug stores, health food stores, and specialty nutrition stores, as well as by mail order").

194. *See id.* (referring to "1,500 cases of eosinophilia myalgia syndrome (EMS), including 38 deaths, [which] were associated with the use of L-tryptophan-containing dietary supplements" and several "reports of serious illnesses associated with certain herbal and other botanical supplements").

195. *See id.* at 33,691 (indicating intention to change strategy for finding solutions in order to achieve public health goals).

196. *See* Regulation of Dietary Supplements, 58 Fed. Reg. 33,690, 33694-695 (proposed June 18, 1993) (to be codified at 21 C.F.R. ch. 1) (identifying a need to establish safe potency levels for vitamins and minerals and discussing recommendations by the FDA's task force to set safe levels, possibly in relation to the highest RDA levels, above which supplement manufacturers would have to prove safety).

197. *See id.* at 33,697 (stating that the marketing of many amino acids violates the FDCA because of their status as unapproved food additives or drugs).

198. *See id.* at 33,698 (indicating the FDA has found herbs to be safe when used "as flavoring agent, stabilizer, thickener, formulation aid, emulsifier, or firming agent" but such uses do "not necessarily reflect the levels at which, or forms in which, they have been used in dietary supplements").

199. *See id.* at 33,697-698 (recognizing that a significant amount of herbal supplements on the market make health claims and are therefore drugs that have not complied with the pre-market approval process for drugs).

200. *See Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations for 1994 Before a Subcomm. Of the Comm. On Appropriations*, 103d Cong. 171-72 (1993) (testimony of Martie Whittekin, President, National Nutritional

Congress had blocked similar regulations in the past,²⁰¹ previous regulatory efforts by the FDA had effectively restricted consumer access to a wide variety of supplements by creating cost prohibitive restrictions on supplement manufacturers.²⁰² This potential for continued restrictions on consumer access to dietary supplements fueled support for restricting the FDA's ability to regulate dietary supplements.²⁰³ Senators Hatch and Reid had introduced a bill addressing these issues shortly before the release of the FDA's ANPR.²⁰⁴ As amended, this bill, which aimed to increase consumer access both to dietary supplements and to health information regarding supplements,²⁰⁵ was passed and enacted as the Dietary Supplement Health and Education Act of 1994.²⁰⁶

B. The Dietary Supplement Health and Education Act of 1994 ("DSHEA")

Congress enacted DSHEA in order to promote consumer health, encourage preventive health measures, and reduce the nation's health care costs.²⁰⁷ DSHEA, by preventing the FDA from taking

Foods Assoc.) (discussing the ANPR's announcement that the FDA intended to lower the "maximum limits on the amount of consumption of certain vitamins and minerals" and to continue regulating supplements as food additives despite "several recent court cases that have reaffirmed the illegality of such action"); Gilhooley, *supra* note 185, at 678 (noting that because the ANPR caused huge controversy a "national blackout day" was organized in protest where all items that would be effected by FDA rule making were "draped in black so . . . customers could see what would be taken away").

201. See *supra* notes 149-53 and accompanying text (discussing the Proxmire/Rogers Amendment and Congress' intent to block the FDA from regulating dietary supplements as drugs).

202. See *supra* notes 161-64 and accompanying text (describing how through case-by-case regulation the FDA restricted supplement manufacturers).

203. See BASS & YOUNG, *supra* note 111, at 7 (indicating that support for a bill introduced in the Senate, which would later be enacted as the Dietary Supplement Health and Education Act of 1994, was strengthened by the release of the 1993 ANPR).

204. S. 784, 103d Cong. (1993); see also *Regulation of Dietary Supplements Before the Subcomm. on Health and the Environment of the Comm. On Energy and Commerce*, 103d Cong. 3-4 (1993) (statement of Senator Orrin Hatch) (aiming also to put an end to what Senator Hatch called the "vitamin wars" and stating that he did not think that "continued polarization [was] constructive").

205. See S. 784, 103d Cong. (1993) (enacted) (striving to open up the dietary supplement market).

206. See DSHEA, Pub. L. No. 103-417, 108 Stat. 4325 (1994) (amending the FDCA).

207. See DSHEA, Pub. L. No. 103-417, § 2(15)(A), 108 Stat. 4325, 4326 (1994) (stating that "legislative action that protects the right of access of consumers to safe dietary supplements is necessary in order to promote wellness"); see also DSHEA, Pub. L. No. 103-417, § 2(1)-(6)(B), 108 Stat. 4325, 4325-26 (1994) (noting improvement of the "health status of United States citizens ranks at the top of the national priorities of the Federal Government," and the reduction of long-term health care costs is paramount).

restrictive regulatory actions,²⁰⁸ fulfilled these goals by providing consumers greater access to dietary supplements and information regarding the health benefits of supplement use.²⁰⁹ DSHEA was premised on the belief that dietary supplements are safe, and that the dietary supplement industry would continue to produce safe products.²¹⁰ The enactment of DSHEA increased consumer access to dietary supplements and their associated health benefits²¹¹ partially by “deregulat[ing] the dietary supplement industry.”²¹²

DSHEA expanded the FDCA definition of dietary supplements to include herbs, amino acids, and any other “dietary substance for use by man to supplement the diet by increasing the total dietary intake.”²¹³ By including such substances in its definition of dietary supplements, DSHEA brought these supplements under the protection of the Proxmire Amendment,²¹⁴ preventing the FDA from classifying such supplements as drugs.²¹⁵ DSHEA further restricted regulatory avenues utilized by the FDA by excluding dietary supplements, as defined by DSHEA, from treatment as food

208. See *infra* notes 215-18 and accompanying text (illustrating Congress’ effort to forbid the FDA from restricting supplements through the enactment of DSHEA).

209. See *infra* notes 213-30 and accompanying text (describing the effects of DSHEA). DSHEA also provided for the establishment of a Commission on Dietary Supplement Labels to increase consumer access to information regarding the health benefits of dietary supplements, and an Office of Dietary Supplements to increase scientific research and better organize data regarding the benefits of dietary supplements. See DSHEA, Pub. L. No. 103-417, § 12, 108 Stat. 4325, 4332-33 (1994); see *id.* at sec. 13, § 485B, 108 Stat. 4325, 4334-35 (1994).

210. See DSHEA, Pub. L. No. 103-417, § 2(14), 108 Stat. 4325, 4326 (1994) (determining that “dietary supplements are safe within a broad range of intake, and safety problems with the supplements are relatively rare”); see also *Dietary Supplement Health and Education Act: Is the FDA Trying to Change the Intent of Congress? Before the House Comm. on Government Reform*, 106th Cong. 8 (1999) (opening statements of Hon. Dan Burton) (“It is more likely that you will be struck by lightning and die in this country than it is that you will die from using a dietary supplement.”).

211. See Levitt, *supra* note 3 (indicating that the dietary supplement industry has grown exponentially since DSHEA was enacted); see also *Dietary Supplement Health and Education Act: Is the FDA Trying to Change the Intent of Congress? Before the House Comm. on Government Reform*, 106th Cong. 29 (1999) (statement by Jane Henney, M.D., Commissioner, FDA) (noting exponential growth of the dietary supplement industry under DSHEA and suggesting that part of this growth is a result of increased consumer access to supplements in stores other than health food stores).

212. Lurie, *supra* note 4, at 1. See also Gilhooley, *supra* note 185, at 666 (stating that “being DSHEAed has become a byword for deregulation in some quarters”).

213. 21 U.S.C. § 321(ff) (1994) (defining dietary supplement).

214. Vitamin and Mineral Amendments of 1976, 21 U.S.C. § 350 (1994).

215. See Health Research and Health Services Amendments of 1976, Pub. L. No. 94-278, sec. 501(a), § 411, 90 Stat. 401, 410 (1976) (amending the FDCA and forbidding the classification dietary supplements as drugs); see also S. REP. NO. 103-410, at 20 (1994) (indicating the need to make the definition of dietary supplements clear because of FDA attempts to regulate such supplements as drugs despite the Proxmire Amendment).

additives.²¹⁶ DSHEA provisions necessarily negated the ANPR published by the FDA in 1993 that had suggested regulating amino acids, herbs, and other supplements as food additives and drugs.²¹⁷ In order to ensure that the FDA would make no attempt to implement such rule making, DSHEA included a provision declaring the 1993 ANPR null and void.²¹⁸

DSHEA also established three new standards for finding dietary supplements adulterated.²¹⁹ First, a dietary supplement is adulterated if it “presents a *significant* or *unreasonable* risk of illness or injury under” the conditions of use recommended on the supplement’s label or, if none are provided, under “ordinary conditions of use.”²²⁰ The second new adulteration standard provides for unforeseen emergencies and allows the Secretary of Health and Human Services²²¹ to remove a supplement from the market if it “pose[s] an *imminent* hazard to public health or safety.”²²² Finally, a dietary supplement is adulterated if it “is a new dietary ingredient for which there is inadequate information to provide reasonable assurance that such ingredient does not present a significant or unreasonable risk of illness or injury.”²²³ This third standard is not applicable to the analysis of the threat of BSE in dietary supplements because the

216. See DSHEA, Pub. L. No. 103-417, sec. 3(b)(3), § 201(s), 108 Stat. 4325, 4328 (1994) (codified at 21 U.S.C. § 321(s)(6) (1994)) (excepting both dietary supplements and ingredients intended for use in dietary supplements from the definition of “food additive”).

217. See *id.* (forbidding the FDA from classifying dietary supplements as food additives and including herbs and amino acids in the definition of dietary supplements so as to prevent the FDA from classifying them as drugs or food additives); see also *supra* notes 197-99 and accompanying text (outlining the provisions of the ANPR that DSHEA negates).

218. See DSHEA, Pub. L. No. 103-417, § 11, 108 Stat. 4325, 4332 (1994) (“[The ANPR] of June 18, 1993. . . is null and void and of no force or effect insofar as it applies to dietary supplements.”).

219. See DSHEA, Pub. L. No. 103-417, sec. 4, § 402(f), 108 Stat. 4325, 4328 (1994) (adding a section to the FDCA’s adulterated foods section relating solely to dietary supplements). Dietary supplements may still be deemed unsafe and adulterated according to the adulterated standards for all foods as previously provided for by the FDCA. See 21 U.S.C. § 342(f)(1)(D) (1994).

220. DSHEA, Pub. L. No. 103-417, sec. 4, § 402(f)(1)(A), 108 Stat. 4325, 4328 (1994) (emphasis added).

221. See U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, ORGANIZATIONAL CHART (illustrating the government organizations within the Department of Health and Human Services, including the FDA), available at <http://www.hhs.gov/about/orgchart.html> (last revised July 6, 2001).

222. DSHEA, Pub. L. No. 103-417, sec. 4, § 402(f)(1)(C), 108 Stat. 4325, 4328 (1994) (emphasis added).

223. *Id.* at sec. 4, § 402(f)(1)(B), 108 Stat. at 4328. See also *id.* at sec. 8, § 413(c), 108 Stat. at 4331-32 (defining “the term ‘new dietary ingredient’ [as] a dietary ingredient that was not marketed in the United States before October 15, 1994, and does not include any dietary ingredient which was marketed in the United States before October 15, 1994”).

ingredients that pose a threat of BSE do not fall under the definition of new dietary ingredient.²²⁴

DSHEA severely limited the FDA's regulatory ability by placing the burden of proving supplement safety solely on the FDA.²²⁵ The FDA now bears the burden of proving "by a preponderance of the evidence," that a supplement is adulterated or unsafe.²²⁶ Prior to the enactment of DSHEA, manufacturers of dietary supplements often bore the burden of proving that their products met safety standards.²²⁷ The FDA's burden of proof and the new adulteration standards decrease the likelihood of success in actions brought by the FDA against supplement manufacturers.²²⁸ Thus, DSHEA encouraged manufacturers to produce more products and consumer access to

224. This standard would not be applicable to most BSE and dietary supplements, because many of the ingredients that pose a potential threat of carrying BSE were marketed before October 15, 1994. *See Adverse Event Reporting, supra* note 5, at 5 (concluding that "because FDA lacks documentation as to which dietary ingredients were marketed before 1994 and because there is a wide range of articles used for food, it is difficult for FDA to determine whether" a product is subject to the notice requirement for new dietary supplement ingredients). Even for new dietary ingredients, a manufacturer may establish the safety of that ingredient simply by submitting evidence of safety to the FDA seventy-five days before placing a supplement on the market. *See Food Safety: Improvements Needed in Overseeing the Safety of Dietary Supplements and "Functional Foods"*, GEN. ACCT. OFF. REP. NO. RCED-00-156, at 9 (July 11, 2000), available at <http://www.gao.gov/archive/2000/rc00156.pdf>. This standard is not extremely restrictive on manufacturers. *See id.* at n.9 (noting that even the seventy-five day notification requirement can be eliminated if the new dietary ingredient "has been 'present in the food supply as an article used for food in a form in which the food has not been chemically altered'" (citation omitted)). Following submission there is no need for the company to wait for approval from the FDA; they must only wait seventy-five days and then the supplement may be marketed as any other supplement. *See id.* If the FDA disagrees with the safety determination of the manufacturer, it is necessary for the FDA to meet its burden of proving that there is not a reasonable assurance that the new dietary ingredient does not pose a significant or unreasonable risk of illness or injury. *See id.*

225. *See* DSHEA, Pub. L. No. 103-417, sec. 4, § 402(f)(1), 108 Stat. 4325, 4328 (1994) ("In any proceeding under this subparagraph the United States shall bear the burden of proof on each element to show that a dietary supplement is adulterated."); *see also* BASS & YOUNG, *supra* note 111, at 3 (noting that section 4 places the burden of proof on the government for the first time).

226. *See* S. REP. NO. 103-410, at 36 (1994) (discussing the changes to the FDCA and establishing the standard for the FDA's burden of proof) (citing *United States v. 71/55 Gallon Drums of Stuffed Green Olives*, 790 F. Supp. 1379 (N.D. Ill. 1992)).

227. *See* BASS & YOUNG, *supra* note 111, at 39 (indicating that prior to DSHEA, FDA took action against supplement manufacturers by treating supplements that made drug claims as unapproved new drugs or, when no claims were made, as an unapproved food additive shifting the burden of proving product safety to the company being proceeded against).

228. *See id.* at 45-50 (noting under former regulations, FDA satisfied its burden of proof in establishing that a dietary ingredient was unsafe "simply by submitting an affidavit stating that scientists did not 'generally' recognize the safety of the substance," as compared to DSHEA, which requires the United States to bear the burden of proof on each element and gives the Court the power of de novo review).

supplements began to increase.²²⁹

Finally, DSHEA “retain[ed] existing law[s], which do[] not authorize the FDA to perform pre-market review or approval of dietary supplements.”²³⁰ Pre-market review and approval are required for food additives and drugs,²³¹ categories in which DSHEA makes clear supplements are not to be included.²³² DSHEA also maintained other differences between the regulation of drugs and supplements; for example, manufacturers of over-the-counter and prescription drugs are required to register their companies and products with the FDA, neither of which is required of dietary supplement manufacturers.²³³

III. THE ABILITY OF THE FDA TO PROTECT AGAINST BSE IN DIETARY SUPPLEMENTS

For decades consumers were concerned about the FDA restricting access to dietary supplements.²³⁴ Currently, the concern has shifted to whether the FDA, under DSHEA, can protect consumers from health threats posed by those same dietary supplements.²³⁵ By forbidding the classification of dietary supplements as food additives, and by reiterating that dietary supplements are not to be classified as drugs,²³⁶ DSHEA closed two avenues traditionally used by the FDA to regulate dietary supplements it deemed unsafe.²³⁷ While creating new

229. See S. REP. NO. 103-410, at 21 (1994) (finding it necessary to clearly state that the FDA has the burden of proof regarding safety because “the committee is . . . concerned that the FDA will persist in . . . litigation [against manufacturers], and thereby continue to subject small manufacturers to the choice of abandoning production and sale of lawful products, or accepting the significant financial burden of defending themselves against baseless lawsuits”).

230. *Id.*

231. See 21 U.S.C. § 348(b) (1994) (outlining the petitioning process for FDA approval of food additives); see also *id.* § 355(a) (“No person shall introduce or deliver for introduction into interstate commerce any new drug, unless an approval of an application filed pursuant to subsection (b) or (j) of this section is effective with respect to such drug.”).

232. See *supra* notes 215-17 and accompanying text (discussing the exclusion of dietary supplements from the categories of drugs and food additives).

233. See *Adverse Event Reporting*, *supra* note 5, at 6 (displaying a table that compares the manufacturer requirements for different categories of FDA regulated products).

234. See *supra* Part II.A (highlighting consumer concerns in the context of FDA regulatory attempts).

235. See *supra* note 109 and accompanying text (recognizing concerns over BSE in dietary supplements); see also *Food Safety: Improvements Needed in Overseeing the Safety of Dietary Supplements and “Functional Foods”*, GEN. ACCT. OFF. REP. NO. RCED-00-156, at 4 (July 11, 2000) (“FDA’s efforts and federal laws provide limited assurances of the safety of functional foods and dietary supplements.”), available at <http://www.gao.gov/archive/2000/rc00156.pdf>.

236. See *supra* notes 213-18 (illustrating the restrictions on the classification of dietary supplements by the FDA).

237. See *supra* notes 161-64 (acknowledging the FDA’s use of the food additive

categories for the FDA to deem a dietary supplement adulterated,²³⁸ DSHEA significantly limited these methods by placing the burden of proof solely on the FDA.²³⁹ The new burden of proof as applied to the new adulteration standards make it extremely difficult for the FDA to restrict or remove from the market any supplement that poses a safety threat.²⁴⁰ DSHEA, combined with the unique nature of BSE, illustrate the new difficulties facing the FDA in its protection of dietary supplement consumers.²⁴¹

A. *The FDA's Burden of Proof*

DSHEA placed the burden of proving dietary supplements unsafe or adulterated solely on the FDA.²⁴² In order to succeed in an action to restrict or remove a supplement, the FDA must prove that it meets the standards to declare a dietary supplement adulterated by a preponderance of the evidence.²⁴³ This burden requires the government to provide "evidence which is of greater weight or more convincing than the evidence which is offered in opposition to it."²⁴⁴ The FDA must meet this burden for all actions taken against supplement manufacturers.²⁴⁵

The FDA typically learns of health risks related to dietary supplements from its adverse event reporting system.²⁴⁶ This system is

standard to regulate dietary supplements). If the FDA could still classify dietary supplements as food additives, the agency could restrict those supplements containing gelatin or high-risk bovine materials by classifying the bovine ingredients as food additives no longer generally recognized as safe. See S. REP. NO. 103-410, at 21 (1994) (noting that current law provides food additives that generally are not recognized as safe are deemed unsafe until approved by the FDA); see also *supra* note 199 and accompanying text (illustrating another method historically used by the FDA to regulate dietary supplements, namely, the classification of dietary supplements making any health or structure and function claims as drugs).

238. See *supra* notes 219-27 and accompanying text (describing new adulteration standards for dietary supplements under the FDCA as amended by DSHEA).

239. See *supra* notes 225-26 (detailing the change in burden of proof established by DSHEA).

240. See *infra* Part III (illustrating the difficulties faced by the FDA in dietary supplement regulation).

241. See *id.*

242. See DSHEA, Pub. L. No. 103-417, sec. 4, § 402(f)(1), 108 Stat. 4325, 4328 (1994) ("[T]he United States shall bear the burden of proof on each element to show that a dietary supplement is adulterated.").

243. See *supra* note 226 and accompanying text (describing the standard of proof required).

244. BLACK'S LAW DICTIONARY 1182 (6th ed. 1990) (citing *Braud v. Kinchen*, 310 So. 2d 657, 659 (La. App. 1st Cir. 1975)) (defining the preponderance of the evidence burden of proof).

245. See DSHEA, Pub. L. No. 103-417, sec. 4, § 402(f), 108 Stat. 4325, 4328 (1994) (establishing a new burden of proof).

246. See *Adverse Event Reporting*, *supra* note 5, at 1 (describing the FDA's adverse event reporting system as "a system to collect and review adverse event reports on

also the means by which the FDA gathers most of its evidence regarding the safety of supplements.²⁴⁷ Data in the system is collected from reports of adverse reactions to supplements made by individuals, health care providers, and manufacturers.²⁴⁸ An adverse event reporting system could arguably collect reliable data to be used in an action against a supplement posing a health risk, however, there are many aspects of both the dietary supplement adverse event reporting system and the FDA's regulatory abilities under DSHEA that make the reporting system insufficient to provide evidence for the FDA to meet its burden of proof.²⁴⁹

The FDA's adverse event reporting system for dietary supplements is voluntary and does not require supplement manufacturers to report adverse events of which they are aware.²⁵⁰ As a result of the voluntary nature of the system, it is estimated that less than one percent of adverse reactions to dietary supplements are reported to the FDA.²⁵¹ The FDA gathers as much information as possible from persons reporting adverse events.²⁵² Often times this information is incomplete due to the FDA's limited regulatory control over supplement manufacturers.²⁵³ For example, the FDA was unable to

supplements. An adverse event is an incident of illness or injury that *may* be associated with a product or ingredient.”); *id.* at 2 (commenting on the FDA's reliance on voluntary adverse event reporting to alert the agency to possible safety concerns relating to supplements); *see also* Levitt, *supra* note 3 (recognizing the limits imposed by DSHEA restricting the FDA to “post-market[]” actions and recognizing the role of adverse event reporting in identifying health concerns posed by supplements).

247. *See Adverse Event Reporting, supra* note 5, at 5 (noting the use of adverse event reporting system by the FDA to assess the safety of products once it has been alerted to a health risk because “[i]n the case of dietary supplements, [the] FDA has relatively little clinical data on ingredients and products. Thus, [the] FDA is inherently limited in its ability to investigate signals of public health problems generated by the system.”).

248. *See id.* at 1 (noting the variety of individuals providing information collected by the FDA's dietary supplement adverse event reporting system).

249. *See infra* notes 250-64 and accompanying text (highlighting the shortcomings of data collected from the dietary supplement adverse event reporting system).

250. *See Adverse Event Reporting, supra* note 5, at 1 (reporting that the FDA receives adverse event reports on dietary supplements from consumers, health professionals, and manufacturers on a strictly voluntary basis); *id.* at 6 (indicating that drug and infant formula manufacturers as well as some food additive manufacturers are required to report adverse events to the FDA).

251. *See id.* at 2 (citing FDA-commissioned study); *see also Food Safety: Improvements Needed in Overseeing the Safety of Dietary Supplements and “Functional Foods”*, GEN. ACCT. OFF. REP. NO. RCED-00-156, at 16-17 (July 11, 2000) (citing a 1999 survey in which 11.9 million consumers of dietary supplements reported some adverse reaction compared to the 2,797 reports of adverse events reported to the FDA from 1993 to 2000), *available at* <http://www.gao.gov/archive/2000/rc00156.pdf>.

252. *See Adverse Event Reporting, supra* note 5, at 12-14 (elaborating on all the information the FDA attempts to collect from a person reporting an adverse event, such as medical, product, manufacturer and consumer information).

253. *See id.* at 19 (recognizing the need for legislative and regulatory changes in

determine the ingredients contained in thirty-two percent of the supplements for which adverse reactions were reported because ingredients were unknown to the individual reporting the adverse event and dietary supplement products are not registered with the FDA.²⁵⁴

Other problems facing the FDA in utilizing its adverse event reporting system to gather evidence include difficulty in acquiring samples of involved products²⁵⁵ and difficulty in determining the identity of supplement manufacturers.²⁵⁶ Supplement manufacturers are not required to send samples of their products to the FDA prior to marketing, and upon investigating, the exact product may no longer be on the market or may be difficult to obtain.²⁵⁷ Supplement manufacturers also do not have to register with the FDA, and the “FDA reports that dietary supplement companies have often moved from the addresses listed on the labels or exclude required [location] information from their labels” when the agency tries to follow up on a report of an adverse event.²⁵⁸ The data collected from this system is often considered scientifically unreliable, because the FDA’s database contains only a fraction of adverse events, incomplete information as to the ingredient causing the event, and little to no information from supplement manufacturers.²⁵⁹

In the FDA’s efforts to prevent BSE in dietary supplements, the evidence collecting limitations of the adverse event reporting system are further compounded by the nature of BSE.²⁶⁰ The incubation period of up to thirty years between infection and the onset of

order to solve problems associated with the system).

254. See *Food Safety: Improvements Needed in Overseeing the Safety of Dietary Supplements and “Functional Foods”*, GEN. ACCT. OFF. REP. NO. RCED-00-156, at 12 (July 11, 2000) (detailing FDA difficulties in collecting pertinent information relating to adverse events and noting that because products are not registered with the FDA, there is little to no ingredient information on file with the agency prior to the adverse event), available at <http://www.gao.gov/archive/2000/rc00156.pdf>.

255. See *Adverse Event Reporting*, *supra* note 5, at 13 (stating that the FDA currently has been unable to get a sample for 69% of the products for which adverse events were reported).

256. See *id.* (“FDA could not determine the identity of the manufacturer for 32% (1,153 of 3,574) of the products involved in the reports.”).

257. See *id.* (discussing requirements of dietary supplement manufacturers).

258. See *id.* (“In one instance, FDA received two reports of comas associated with a product, but when field inspectors tried to track down the manufacturer, they found a post office box belonging to an owner who had since moved . . .”).

259. See *Dietary Supplements: Uncertainties in Analyses Underlying FDA’s Proposed Rule on Ephedrine Alkaloids*, GEN. ACCT. OFF. REP. NO. GGD-99-90, at 2 (July 2, 1999) (concluding that the data gathered from the dietary supplement adverse event reporting system was unreliable), available at <http://www.gao.gov/archive/1999/h299090.pdf>.

260. See *infra* notes 261-64 and accompanying text (detailing the problems posed by BSE in collecting adverse event data).

human TSEs would make it extremely difficult for the FDA to link vCJD with dietary supplements through its adverse event reporting system.²⁶¹ For example, the exact supplement might no longer be on the market by the time a consumer is diagnosed with CJD or vCJD. Therefore, protecting others from infection by the same adulterated supplement might be impossible.²⁶² Another difficulty is that a person diagnosed with a TSE may have eaten beef, may not remember which supplements were consumed, or may have undergone a surgical procedure at some time during the disease's incubation period, making it difficult to isolate and identify the cause of the disease.²⁶³ Finally, if the FDA waits until U.S. cases of human TSEs from dietary supplements are reported, up to thirty years of BSE exposure to the population would already have occurred.²⁶⁴ Therefore, it is highly unlikely that the FDA's main resource for gathering evidence will help the agency meet its burden of proof in an action against dietary supplement manufacturers in an effort to protect the public from BSE.

The FDA has other means of collecting data; but unfortunately, these methods are also inadequate to meet the burden of proof required by DSHEA.²⁶⁵ In 2000, the FDA created a questionnaire to assess whether manufacturers were using bovine materials from countries with reported cases of BSE.²⁶⁶ This questionnaire is given to manufacturers who are inspected by the FDA.²⁶⁷ This questionnaire is inadequate for determining which manufacturers are using high-risk bovine materials for several reasons.²⁶⁸ First, since dietary supplement manufacturers are not required to register with the FDA, the FDA

261. See *POISON ON A PLATE*, *supra* note 16, at 255 (explaining the long incubation period for all TSEs and estimating a thirty year incubation period for some human TSEs); see also *id.* at 254 (discussing the difficulty of discovering information about TSEs because of the long incubation periods, in that scientists cannot wait for a twenty year incubation period to elapse in chimpanzees before performing experiments).

262. The long incubation period of the disease provides a long time frame in which the dietary supplements carrying the disease will be consumed and others infected. See *supra* note 261 (highlighting some of the difficulties in consumer protection posed by the nature of TSEs).

263. See *supra* Part I.B (describing the various ways TSEs can be transmitted).

264. See *supra* note 261 (noting the incubation period of TSEs in humans).

265. See *infra* notes 266-76 (exploring the other methods of data collecting used by the FDA).

266. See Food Compliance Program, *supra* note 50, at Attachment B (providing copy of questionnaire for use in manufacturing plant inspections).

267. See *id.*; see also Part III.A.2 (describing the process for administering the questionnaire and subsequent follow-up).

268. See *infra* notes 269-74 (listing the limitations of the questionnaire in gathering information).

can only inspect those manufacturers it can find.²⁶⁹ Secondly, the FDA has the personnel resources to inspect only a small portion of dietary supplement manufacturing facilities.²⁷⁰ At the current rate of FDA inspections, the percentage of manufacturers using high-risk bovine materials could not be assessed for years.²⁷¹ Third, there are no legal repercussions for dishonest responses and by analyzing the BSE crisis in England it becomes obvious that some individuals and companies will be dishonest when money and reputation are involved.²⁷² Fourth, the questionnaires are not filled out while inspectors are present, which may hinder the accuracy and reliability of the data collected this way.²⁷³ Finally, even if a manufacturer completes the questionnaire, returns it and admits that it is using high-risk bovine materials, the FDA has stated that “absence of adequate procedures to preclude use of bovine tissue from known BSE-countries, is not by itself a *sufficient* basis for a regulatory recommendation.”²⁷⁴

Another method used by the FDA to collect evidence to prove that a product is adulterated is testing the product itself.²⁷⁵ This method provides no use to the FDA when determining the presence of BSE, because there is no means of testing infectivity.²⁷⁶ Due to the restraints facing the FDA in its regulation of dietary supplements and

269. See *Adverse Event Reporting*, *supra* note 5, at 6 (noting that dietary supplement manufacturers, unlike drug manufacturers, do not have to register with the FDA); see also FOOD COMPLIANCE PROGRAM, *supra* note 50, at Program Management Instructions Part A (indicating that the help of local inspectors will be needed to identify manufacturers to inspect and indicating that there may be manufacturers in different localities that are unknown to the FDA and to local inspectors).

270. See FOOD COMPLIANCE PROGRAM, *supra* note 50 (suggesting prioritization of factories for inspection to most effectively use the FDA’s resources); see also Ben White, *Food Inspection Reorganization Gains Impetus: After Attacks, Calls Increase for Unifying Agencies’ Efforts*, WASH. POST, Oct. 12, 2001, at A31 (“The FDA employs 750 inspectors to monitor 55,000 food plants.”).

271. See *supra* note 270 (demonstrating the limited inspection capabilities of the FDA).

272. 1 THE BSE INQUIRY 62 (2000) (acknowledging that violations of feed ban occurred for some time after it came into force), *available at* <http://www.bseinquiry.gov.uk>. See *id.* at 68 (stating that over 41,000 cows born after the feed ban was put in place contracted BSE).

273. See FOOD COMPLIANCE PROGRAM, *supra* note 50, at Attachment B (providing instructions for manufacturers to send the completed questionnaire in at a later date).

274. FOOD COMPLIANCE PROGRAM, *supra* note 50 (emphasis added).

275. See Dietary Supplements Containing Ephedrine Alkaloids, 62 Fed. Reg. 30,678, 30,679 (proposed June 4, 1997) (discussing the process by which the FDA tests the dietary supplement products it has purchased at the store in order to gather information about certain ingredients).

276. See *supra* notes 42-43 and accompanying text (indicating that the only means of determining the presence of TSEs is through inspection of the brain of a TSE victim and that no test for infectivity of animal derived products exists).

the nature of BSE, the FDA's primary data collecting methods are insufficient to meet the required burden of proof established by DSHEA.²⁷⁷

B. The Significant and Unreasonable Risk Standard

The first new adulteration standard for dietary supplements established by DSHEA requires the FDA to prove that a dietary supplement or dietary supplement ingredient "presents a significant or unreasonable risk of illness or injury under—(i) conditions of use recommended or suggested in labeling, or (ii) if no conditions of use are suggested or recommended in the labeling, under ordinary conditions of use."²⁷⁸ Under this standard, if the FDA deems a product to pose a substantial and unreasonable risk, it would issue "a notice in the Federal Register proposing to declare a dietary supplement adulterated."²⁷⁹ In making such a declaration, the FDA would either propose to remove the product from the market or propose safety regulations for the safe use of the product.²⁸⁰ The FDA has the burden of proving in its notices and proposed rules that the product or ingredient poses such a substantial or unreasonable risk as to warrant regulation.²⁸¹ Following a comment period, the FDA can issue a final regulation.²⁸² Manufacturers can challenge any FDA regulation in court in order to determine whether the FDA has met its burden of proof.²⁸³

The "substantial and unreasonable risk" standard as applied to dietary supplements has never been interpreted by the courts.²⁸⁴ The

277. See *supra* notes 246-76 and accompanying text (exploring the FDA's data collecting methods).

278. *Id.* at sec. 4, § 402(f)(1)(A), 108 Stat. at 4328.

279. S. REP. NO. 103-410, at 35 (1994).

280. See Dietary Supplements Containing Ephedrine Alkaloids, 62 Fed. Reg. 30,678, 30,678 (proposed June 4, 1997) (to be codified at 21 C.F.R. pt. 111) (illustrating what steps the FDA would take in proposing regulations).

281. See DSHEA, sec. 4, § 402(f)(1), 108 Stat. at 4328 (placing the burden on the U.S. Government to show that the dietary supplement is adulterated and giving the court de novo review).

282. See S. REP. NO. 103-410, at 35 (1994) (outlining procedures for utilizing the imminent standards provision).

283. DSHEA, sec. 4, § 402(f)(1)-(2), 108 Stat. at 4328 (stating that the person against whom a proceeding may be initiated shall be given notice and provided the opportunity to make oral and written statements and noting that a court shall decide whether the United States has met its burden of proof).

284. See COMM'N ON DIETARY SUPPLEMENT LABELS, REPORT OF THE COMM'N ON DIETARY SUPPLEMENT LABELS 20 (1997) (noting that the courts have yet to interpret the imminent hazard standard for dietary supplements, but stating that the standard resembles a Supreme Court test established in 1914, which examines safety in comparison to the quantity of the substances and the risks when "reasonably considered"), available at <http://www.health.gov/dietsupp/final.pdf>.

Commission on Dietary Supplement Labels suggests that the FDA “need not show that injury has occurred, only that a reasonable possibility of harm exists.”²⁸⁵ However, in practice, it appears that the standard is likely to be applied more strictly.²⁸⁶ Because the courts have not interpreted the standard, in order to analyze the FDA’s likelihood for success in attempting to regulate high-risk bovine ingredients used in dietary supplements, one can look to the success of FDA attempts at regulating other dietary supplement ingredients under the provisions established by DSHEA.

1. *Application of the significant and unreasonable risk standard: the case study of ephedrine alkaloids*

In 1997, the FDA stated its intention to declare supplements containing certain amounts of the botanical ephedrine alkaloids adulterated under the FDCA’s “significant and unreasonable” standard.²⁸⁷ The FDA became aware of risks associated with ephedrine alkaloids as reports increased concerning adverse reactions and deaths in connection with ephedrine alkaloids.²⁸⁸ From the time the FDA began collecting adverse event data in 1993 until the time it issued its proposed rules in 1997, the agency had received more than 800 reports of adverse reactions to over 100 different dietary supplements containing ephedrine alkaloids.²⁸⁹

285. *Id.*

286. *See supra* notes 287-311 and accompanying text (discussing efforts by the FDA to regulate ephedrine alkaloids).

287. *See* Dietary Supplements Containing Ephedrine Alkaloids, 62 Fed. Reg. 30,678, 30,678 (proposed June 4, 1997) (to be codified at 21 C.F.R. pt. 111) (proposing to declare dietary supplements containing 8mg or more of ephedrine alkaloids per serving adulterated as well as supplements whose labeling suggest consumers take 8mg or more in a 6-hour period or 24mg or more in a day). Citing its authority to declare ephedrine alkaloid containing supplements adulterated under sections 402(f)(1)(A), 402(a)(1) and 701(a). *See id.* at 30,693 (citing 21 U.S.C. § 371(a)). Section 402(f)(1)(A) is the provision for finding dietary supplements adulterated if they pose a significant and unreasonable risk of injury or illness. *See id.* Section 402(a)(1) provides that the FDA may declare a food, including dietary supplements, adulterated “if it bears or contains any added poisonous or deleterious substance that may render it injurious to health.” *Id.* Section 701(a) gives the FDA the authority to issue regulations in order to enforce the FDCA. *See id.*

288. *See* Dietary Supplements Containing Ephedrine Alkaloids, 62 Fed. Reg. at 30,679 (noting that ephedrine alkaloids made up between fifty to sixty percent of all adverse events reported for dietary supplements). Serious reactions included “abnormal heart rhythms, chest pain, heart attack, stroke, significant elevations in blood pressure, seizure, hepatitis, coma, psychosis, and death” and less serious reactions included “nervousness, dizziness, tremor, minor alterations in blood pressure or heart rate, headache and gastrointestinal distress.” *Id.* at 30,683.

289. *See id.* at 30,679 (indicating slight uncertainty to the ingredients of some of the supplements reported to have caused reactions because of the lack of product registration).

Once alerted to the potential health risk, the FDA began gathering evidence.²⁹⁰ First, the FDA gathered information about the types of supplements that included ephedrine alkaloids and the labeling suggestions associated with the products.²⁹¹ Because the FDA does not receive labeling or ingredient information from manufacturers prior to or after marketing,²⁹² in order to gather such information, the FDA collected supplements by actually purchasing them at various stores.²⁹³ Next, the FDA tested the supplements to determine the amount of ephedrine alkaloids usually contained in a serving.²⁹⁴ After considering adverse event reports, “the known pharmacology of ephedrine alkaloids, numerous case reports published in the scientific literature, and published findings from clinical studies,” and following the death of two young men from ephedrine alkaloids, the FDA convened a Food Advisory Committee meeting.²⁹⁵ After considering all the evidence, the Committee agreed that the FDA needed to act to protect consumers from the risks posed by ephedrine alkaloids.²⁹⁶ While they could not agree on the action to be taken, more than half of the Committee members suggested removing all supplements containing ephedrine alkaloids from the market.²⁹⁷

In 1997, the FDA published its findings and proposed rules concerning ephedrine alkaloids.²⁹⁸ The FDA, based its proposal on

290. *See id.* (discussing methods of gathering evidence, which included collecting dietary supplements on the market and conducting a laboratory analysis of the supplements).

291. *See id.* (stating that product labels collected suggested product uses including “weight loss, body building, increased energy, increased mental concentration, increased sexual sensations, euphoria or as alternatives to elicit street drugs”).

292. *See Adverse Event Reporting, supra* note 5, at 5 (noting that FDA receives relatively little information directly from manufacturers).

293. *See Dietary Supplements Containing Ephedrine Alkaloids*, 62 Fed. Reg. at 30,679 (indicating that the FDA collected over 125 products during a two year period).

294. *See id.* (“Because product labels do not usually provide information on product composition, and there are no data bases containing such data, FDA laboratories analyzed the products collected to quantify the levels of ephedrine alkaloids.”) (citations omitted).

295. *See id.* at 30,680 (following a 1995 Working Group meeting composed of medical and scientific experts from outside the FDA along with industry and consumer representatives, the FDA in light of a dramatic increase in adverse events convened the Food Advisory Committee, which included the Working Group that was created in 1995).

296. *See id.* (citing the committee’s opinion that the FDA take action “to address the rapidly evolving and serious public health concerns associated with the use of ephedrine alkaloid-containing dietary supplements.”) (citation omitted).

297. *See id.* (recognizing the view of other Committee members that the FDA should establish “conditions of use” to reduce safety concerns).

298. *See generally Dietary Supplements Containing Ephedrine Alkaloids*, 62 Fed. Reg. 30,678 (proposed June 4, 1997) (to be codified at 21 C.F.R. pt. 111) (providing

the Committee's recommendations, data collected by the FDA through its adverse events reporting system, scientific literature, and public comments.²⁹⁹ Before deciding which regulations to propose, the Agency performed a cost-benefit analysis of several options.³⁰⁰ The proposed solutions, to what the FDA viewed as a significant and unreasonable health risk, aimed to limit the potency of ephedrine alkaloids used in dietary supplements and require specific warning labels on all supplements containing the ingredient.³⁰¹ While it would appear that the FDA met its burden of proof as interpreted by the Commission on Food and Labeling that a "reasonable possibility of harm exist[ed]," others did not think the evidence was sufficient.³⁰²

"The House Committee on Science requested that the Government Accounting Office (GAO) examine the scientific bases for the ephedrine alkaloids proposal and the agency's adherence to the regulatory flexibility analysis requirements for Federal rulemaking."³⁰³ This request was fueled by challenges to the proposed rules made by industry groups and the Small Business Administration's Office of Advocacy.³⁰⁴ The GAO Report agreed with the FDA that the number and types of adverse events reported and associated with ephedrine

the FDA's proposed regulations regarding ephedrine alkaloids, stating that a dietary supplement would be considered adulterated if it contained 8 milligrams or more of ephedrine alkaloids, or when labeling suggests the consumption of more than 8 milligrams in a 6-hour period or 24 milligrams in a single day). The proposed regulations also included additional labeling requirements and a prohibition of the use of ephedrine alkaloids with other ingredients that have a stimulant effect. *Id.*

299. *See id.* at 30,680-682 (basing its decision to regulate supplements containing ephedrine alkaloids on the combination of information collected over the previous four years, which showed significant events, like heart attack and stroke, occurred in the typical user (young adults) despite a generally low risk for these types of events in young adults).

300. *See Dietary Supplements: Uncertainties in Analyses Underlying FDA's Proposed Rule on Ephedrine Alkaloids*, GEN. ACCT. OFF. REP. NO. GGD-99-90, at 16-21 (July 2, 1999) (criticizing the FDA's cost-benefit analysis), available at <http://www.gao.gov/archive/1999/h299090.pdf>.

301. *See Dietary Supplements Containing Ephedrine Alkaloids*, 62 Fed. Reg. at 30,678 (proposing limited doses, requiring warning labels and forbidding the use of ephedrine alkaloids ingredients with stimulant ingredients such as caffeine because of adverse interaction concerns); *see also id.* at 30,696 (citing section 402(f)(1)(A) as authority to limit combination of stimulants with ephedrine alkaloids).

302. *See infra* notes 303-08 and accompanying text (relating criticisms received).

303. *Dietary Supplements Containing Ephedrine Alkaloids; Withdrawal in Part*, 65 Fed. Reg. 17,474, 17,474 (Apr. 3, 2000) (to be codified at 21 C.F.R. pt. 111) (discussing the history of FDA attempts at establishing regulations for supplements containing ephedrine alkaloids).

304. *See Dietary Supplements: Uncertainties in Analyses Underlying FDA's Proposed Rule on Ephedrine Alkaloids*, GEN. ACCT. OFF. REP. NO. GGD-99-90, at 2 (July 2, 1999) (indicating that several groups challenged the reliability of the scientific evidence used to declare ephedrine alkaloids unsafe and the FDA's cost-benefit analysis leading to the request for a report by the GAO), available at www.gao.gov/archive/1999/h299090.pdf.

alkaloids were reason for concern.³⁰⁵ In addition, the GAO Report found the adverse events reported were “consistent with available scientific evidence and known physiologic and pharmacologic effects of ephedrine alkaloids.”³⁰⁶ However, the GAO Report stated that the agency’s reliance on evidence provided by reported adverse events was weak support for the recommendations that were made by the Agency because of insufficient proof of causation.³⁰⁷ GAO also found fault with the FDA’s cost-benefit analysis, stating that the FDA had made too many assumptions when determining the benefits of the proposed regulations.³⁰⁸

In 2000, based on the GAO Report and comments received following the release of the proposed rules,³⁰⁹ the FDA withdrew many of its proposals to regulate ephedrine alkaloids.³¹⁰ In its withdrawal, the FDA maintained its consideration of the proposed rules to limit the use of ephedrine alkaloids with other stimulant ingredients and to require warning labels; however, the Agency stated that it had made no conclusion as to whether or not these rules would ever be finalized.³¹¹ For eight years the FDA has expressed safety concerns regarding the use of ephedrine alkaloids³¹² and has been criticized for failure to regulate dietary supplements containing ephedrine alkaloids,³¹³ yet the Agency has been unable to gather sufficient evidence to persuade others that it had met its burden in establishing

305. *See id.* at 2-3 (acknowledging reasonableness of the FDA’s concerns while voicing doubt regarding the data that the FDA relied on to determine dosage levels and duration of use limits).

306. *Id.* at 8.

307. *See id.* (indicating that the FDA failed to perform causal analysis to show a link between ephedrine alkaloids and the adverse events, relied on weak data to establish the duration of use lengths, and only used Adverse Event Reports to determine the safe dosage levels).

308. *See id.* at 17-18 (criticizing the FDA’s methods for determining the most financially efficient regulations because it did not indicate the monetary or quantified benefit or cost estimates for each of the alternative regulations).

309. *See* Dietary Supplements Containing Ephedrine Alkaloids; Withdrawal in Part, 65 Fed. Reg. 17,474, 17,474 (Apr. 3, 2000) (placing the number of comments received following the release of the proposed rules at around 14,775).

310. *See id.* at 17,475 (withdrawing limitations on dosage amounts, duration of use and claims).

311. *See id.* at 17,476 (indicating the FDA’s unwillingness to withdraw all of its proposed rules but also hesitating to finalize the regulations not being withdrawn).

312. *See generally* Dietary Supplements Containing Ephedrine Alkaloids, 62 Fed. Reg. 30,678 (proposed June 4, 1997) (to be codified at 21 C.F.R. pt. 111) (discussing the FDA’s concerns and efforts over the years to uncover the risks associated with ephedrine alkaloids).

313. *See, e.g.,* COMM’N ON DIETARY SUPPLEMENT LABELS, REPORT OF THE COMM’N ON DIETARY SUPPLEMENT LABELS 22, 25-26 (1997) (criticizing the FDA for not protecting consumers from the dangers posed by ephedrine alkaloids, yet supporting DSHEA), available at <http://www.health.gov/dietsupp/final.pdf>.

the existence of a substantial and unreasonable risk.³¹⁴

2. *Applying the results of the ephedrine alkaloids case study to bovine ingredients*

High-risk bovine materials in dietary supplements pose an even tougher case than that of ephedrine alkaloids.³¹⁵ Despite the fact that more than half of all adverse events for dietary supplements have been related to ephedrine alkaloids,³¹⁶ the FDA was unable to collect sufficient data from these reports.³¹⁷ There have been no confirmed adverse events related to supplements containing BSE from which the FDA can gather evidence to illustrate the risks posed by bovine ingredients.³¹⁸ In addition, due to the long incubation period of TSEs, it is unlikely that the FDA will receive any effective adverse event reports of vCJD caused by dietary supplements in the short term.³¹⁹

As far as gathering outside evidentiary support, as was done with ephedrine alkaloids, the FDA cannot test potency, ingredients or suggested doses in order to determine the existence of BSE or risks posed by a dietary supplement.³²⁰ Additionally, there are no outside scientific studies regarding bovine materials in dietary supplements and BSE which the FDA can use as support.³²¹ The FDA, while it is trying, has also been unable to gather accurate or reliable data as to how many dietary supplement manufacturers use bovine materials from countries with BSE.³²²

314. See *supra* notes 307-11311 and accompanying text (detailing the failure of the FDA to implement regulations for ephedrine alkaloids because of problems meeting its burden of proof).

315. See *infra* notes 316-27 and accompanying text (discussing the difficulties facing the FDA in meeting its burden of proving bovine ingredients in dietary supplements unsafe in comparison to its difficulties with ephedrine alkaloids).

316. See Dietary Supplements Containing Ephedrine Alkaloids, 62 Fed. Reg. at 30,679 (stating that 50-60% of the adverse events reported to the FDA related to dietary supplements containing ephedrine alkaloids).

317. See *supra* notes 307-08 and accompanying text (indicating that FDA evidence is insufficient).

318. See *Porous Borders: Despite Assurances, U.S. Could Be at Risk for Mad-Cow Disease*, WALL ST. J., Nov. 28, 2001, at A6 (“The USDA says it has conducted an ‘active surveillance program since 1990’ to prevent [BSE] from entering the disease from entering the U.S. and hasn’t detected any signs.”).

319. See *supra* notes 261-64 and accompanying text (outlining the difficulties related to adverse event reporting and vCJD because of the long incubation period of the disease and the uncertainty of its origin).

320. See *supra* notes 42-43 and accompanying text (indicating that no test for BSE in bovine ingredients exists).

321. See *supra* notes 42-43 and accompanying text (stating that there are no tests for indicating the presence of BSE in bovine ingredients).

322. See *supra* notes 266-74 and accompanying text (demonstrating that while the FDA desires to obtain information regarding the bovine ingredients that

The FDA will not likely succeed in implementing binding regulations to protect dietary supplement consumers from BSE, because of the skeptical view of the FDA in relation to dietary supplement regulation,³²³ the nature of BSE,³²⁴ and the regulatory structure surrounding the supplement industry.³²⁵ Any attempts by the FDA to use the significant and unreasonable risk standard to regulate dietary supplements containing bovine ingredients would be criticized as an attempt by the FDA to regain restrictive control over a large percentage of supplements on the market³²⁶ and be withdrawn as was the case with the proposed regulations for ephedrine alkaloids.³²⁷

C. *The Imminent Hazard Standard*

Under DSHEA, a second method available to declare a dietary supplement adulterated is for the Secretary of HHS to declare that a dietary supplement poses an “imminent hazard to public health or safety.”³²⁸ When Congress added this provision to the FDCA, the standard was to be the same as one established for drugs in a 1962 Amendment of the FDCA.³²⁹ However, a Committee report discussing DSHEA, suggested that the standard for dietary supplements should be interpreted to require an “imminent and substantial hazard” instead of only an “imminent hazard.”³³⁰ FDA released regulations defining “imminent hazard” for drugs as one “that should be corrected immediately to prevent injury and that should not be permitted to continue while a hearing or other formal

manufacturers use, the means to collect such information is inadequate).

323. See *supra* Part II.A (highlighting the widespread distrust of the FDA in the area of dietary supplement regulation due to years of FDA attempts at restricting supplement availability).

324. See *supra* Part I.B (discussing the inability to test for the disease, its long incubation period and the relative newness of the disease in scientific research).

325. See *supra* Part III.A (describing the difficulties facing the FDA in meeting the required burden of proof in declaring a supplement unsafe including the fact that most of the evidence required is in the hands of the industry being regulated).

326. See *supra* Part I.C (discussing the large majority of dietary supplements that contain bovine materials).

327. See Dietary Supplements Containing Ephedrine Alkaloids; Withdrawal in Part, 65 Fed. Reg. 17,474 (Apr. 3, 2000) (withdrawing proposed regulations due to insufficient evidence despite the large amount of adverse events associated with the product and the consistency of those events with outside scientific studies).

328. See 21 U.S.C. § 342(f)(1)(C) (2001) (setting out the emergency removal power of the Secretary for dietary supplements).

329. See 21 U.S.C. § 355(e) (1994) (delegating an emergency power to the Secretary of HHS to remove a drug from the market in the event that it is deemed to pose an “imminent hazard” to public safety).

330. See S. REP. NO. 103-410, at 3 (1994) (detailing the new adulteration standards for dietary supplements under DSHEA).

proceeding is being held.”³³¹

While it is not necessary for injuries to have already occurred,³³² the Secretary should look to the number, nature, severity and duration of the injury that will occur if the product remains on the market.³³³ This list is not exhaustive and the Secretary can utilize other factors when determining whether an imminent hazard exists.³³⁴ In actual situations applying this standard to drugs, the Secretary has taken into consideration “the likelihood that the [product] will cause such harm,” the likelihood of the product being removed from the market after administrative proceedings and the availability of other means of protecting the public besides removing the product from the market.³³⁵ The Secretary has never evaluated the “imminent hazard” as applied to dietary supplements but the likelihood of the Secretary taking such action against supplements posing a risk of BSE can be analyzed using the guidelines set out in FDA regulations and prior decisions related to drugs.³³⁶

FDA regulations provide that the Secretary should look to the number of injuries that could result from a product and the nature, severity and duration of such injuries in determining the existence of an “imminent hazard.”³³⁷ The FDA has also examined the likelihood that such injuries will occur when examining the imminent hazard posed by drugs.³³⁸ With BSE infected supplements, the nature of the injuries would be in the form of vCJD,³³⁹ which always causes a permanent and severe injury: death.³⁴⁰ The number of cases of vCJD that dietary supplements would likely cause and the likelihood of the disease occurring would be impossible for the FDA to determine,³⁴¹

331. 21 C.F.R. § 2.5(a) (2001).

332. *See id.* (allowing for the possibility of an imminent hazard to exist before actual injuries have occurred).

333. *See id.* § 2.5(b) (providing guidelines for utilizing the imminent hazard standard).

334. *See Forsham v. Califano*, 442 F. Supp. 203, 208 (D.D.C. 1977) (deciding that as many factors as are practical should be considered before implementing this emergency standard).

335. *See id.* (finding the Secretary had evaluated the safety of a drug using such factors as the likelihood of harm, possible removal of the product from the market and alternative ways to protect the public, among others).

336. *See* 21 C.F.R. § 2.5(a) (2001) (outlining important factors in determining whether a product poses an “imminent hazard”).

337. *See id.*

338. *See Forsham*, 422 F. Supp. at 208 (reviewing standards used by the Secretary in determining whether to use the imminent hazard provision for drugs).

339. *See supra* notes 30-32 and accompanying text (discussing the ability of TSEs to cross the species barrier focusing on BSE in cattle causing vCJD in humans).

340. *See supra* notes 40-41 and accompanying text (explaining the 100% fatality rate from TSEs).

341. *See supra* Part III.B (assessing the impossibility for the FDA to estimate the

despite the agency's belief that a risk exists.³⁴²

There is no way for the FDA or the Secretary of HHS to accurately assess how many dietary supplement manufacturers use gelatin or bovine ingredients from BSE infected countries or even which products contain such ingredients³⁴³ because the FDA does not have the authority to require supplement manufacturers to register their products and does not have access to records of ingredients used in marketed supplements.³⁴⁴ While the FDA has recommended that supplement manufacturers not use such bovine materials, these recommendation letters do not reach all supplement manufacturers³⁴⁵ and do not carry the weight of the law.³⁴⁶ The FDA also faces difficulties assessing which manufacturers are aware of these recommendations and which have complied with them, thereby limiting an important predictor for determining how many illnesses might occur, namely what percentage of manufacturers are utilizing high-risk bovine ingredients.³⁴⁷

The agency faces other barriers in determining the number of illnesses bovine ingredients might cause. The FDA cannot acquire a sampling of products in order to estimate what percentage of dietary supplements are infected with BSE, because there is no method for detecting BSE in supplements.³⁴⁸ Another difficulty in determining the numbers of potential illnesses is caused by the variety of supplements consumed by individual customers.³⁴⁹ Certain bovine

number of cases of vCJD that dietary supplements could cause due to a variety of factors).

342. See *supra* Part I.C (detailing the BSE risks posed by dietary supplements).

343. See *supra* notes 266-74 and accompanying text (discussing the questionnaire procedure by which the FDA hopes to gather information about the use of bovine materials from BSE affected countries).

344. See *Adverse Event Reporting, supra* note 5, at 13 ("FDA lacks the explicit authority to inspect manufacturer files that contain important information on how the product was made.").

345. See *supra* note 269 (noting that the FDA cannot send all dietary supplement manufacturers recommendation letters because the FDA is not aware of the existence of all supplement manufacturers or have sufficient contact information).

346. See *supra* notes 95-100 and accompanying text (discussing the recommendation letters sent to manufacturers in an effort to prevent BSE in dietary supplements).

347. See *supra* notes 266-74 and accompanying text (illustrating the method and its shortcomings that inspectors use to determine if recommendations regarding BSE have reached dietary supplement manufacturers); see also FOOD COMPLIANCE PROGRAM, *supra* note 50 (instructing inspectors that if a manufacturer refuses to provide the desired information to determine product ingredients by watching production).

348. See *supra* notes 42-43 and accompanying text (indicating that no test for TSEs exists).

349. Not all consumers follow the same dietary supplement routines. See CTR. FOR FOOD SAFETY & APPLIED NUTRITION, U.S. FOOD & DRUG ADMIN., *TIPS FOR THE SAVVY SUPPLEMENT USER: MAKING INFORMED DECISIONS AND EVALUATING INFORMATION* (Jan.

materials pose a higher risk of infectivity³⁵⁰ and the consumption of greater amounts of infected materials may increase a consumer's chance of infection.³⁵¹ While there has been a reported case of CJD allegedly caused by dietary supplements, it has not been substantiated because of difficulties linking the two.³⁵² Because of all these variables that cannot be accurately assessed, the FDA cannot begin to estimate the likelihood of people becoming infected with vCJD or the number of people that could be infected from consuming BSE-infected supplements.³⁵³

The Secretary, after removing a product from the market because it poses an imminent hazard to public safety, must immediately begin administrative proceedings against the product.³⁵⁴ Therefore, the Secretary is likely to consider the success of such proceedings before utilizing the "imminent hazard" standard to remove a supplement from the market.³⁵⁵ The FDA is not likely to succeed in an administrative proceeding against supplements containing high-risk bovine materials, considering the historically negative relationship between the FDA and supplement manufacturers, Congress and consumers.³⁵⁶ A large percentage of products would be affected by such proceedings³⁵⁷ and considering the congressional view of FDA regulatory attempts, a proceeding seeking to keep a large number of supplements off the market would likely be viewed as a desperate attempt by the FDA to regain temporary control over supplement

2002) (highlighting the various inquiries each individual supplement user should consider and emphasizing individuality in choosing supplements), *available at* <http://www.cfsan.fda.gov/~dms/ds-savvy.html>.

350. See FOOD COMPLIANCE PROGRAM, *supra* note 50, at Attachment A (evaluating bovine parts and their varying levels of infectivity).

351. See also *POISON ON A PLATE*, *supra* note 16, at 255 (noting that the incubation period is inversely related to the infecting dose).

352. See *supra* note 66 (describing a case of CJD that occurred in a woman who was taking dietary supplements that contained bovine ingredients including cow brain and glands); see also *supra* note 263 and accompanying text (listing the various causes that may be responsible for the spread of TSEs and indicating the resulting difficulties in assessing the actual cause of the disease).

353. See *supra* notes 348-51 and accompanying text (describing various difficulties in assessing the probability of an individual's chance of infection).

354. See 21 U.S.C. § 342(f)(1)(C) (1994) (requiring the Secretary to "promptly . . . initiate a proceeding in accordance [with the FDCA]").

355. See *Forsham*, 442 F. Supp. at 208-09 (acknowledging and validating the Secretary's assessment of the likelihood of success of administrative proceedings in determining whether to use the imminent hazard provision to remove a drug from the market).

356. See *supra* Part II.A (describing the ongoing battle over dietary supplement regulations).

357. See *supra* Part I.C (indicating that a large majority of supplements contain bovine ingredients).

production.³⁵⁸

Finally, the drastic action of pulling a supplement off the market before administrative proceedings, on the grounds that severe injury is likely to occur, requires consideration of whether or not an alternative means of protecting the public exists.³⁵⁹ Because Congress assumed the safety of dietary supplements when enacting DSHEA, it must now rely on supplement manufacturers to take the precautions necessary to produce safe products and to heed the FDA recommendations regarding the use of bovine materials from BSE-infected countries.³⁶⁰ Therefore, continued FDA recommendations to supplement manufacturers are likely to be seen as an alternative to pulling all possibly infected supplements from the shelf.³⁶¹

While the nature of the hazard, a horrible incurable death,³⁶² is extremely severe and the risk of dietary supplements containing and causing such illness exists,³⁶³ there is no scientific evidence linking vCJD to dietary supplements and no way of estimating accurately the risk posed.³⁶⁴ Both the lack of evidence linking supplements with vCJD and the FDA's reputation as anti-dietary supplement are likely to prevent the Secretary of HHS from meeting the required burden of proof during administrative proceedings to determine the existence of an "imminent hazard" posed by high-risk supplements. Therefore, the Secretary and FDA, considering the likely failure of administrative proceedings, will be discouraged from using this emergency provision to remove supplements at high risk of containing BSE from the market.

The "imminent hazard" provision could be used in the future should people begin dying of vCJD as a result of consuming dietary supplements that contain BSE, but at that point the action would be

358. See S. REP. NO. 103-410, at 14-15 (1994) (criticizing the FDA's regulatory attempts in the face of "voluminous scientific record[s] indicating the potential health benefits of dietary supplements").

359. See S. REP. NO. 87-1744, at 7 (1962) (discussing the use of "imminent hazard" standard for removing drugs from the market and indicating that the use of such standard should only occur "in the exceptional case of an emergency, which does not permit the Secretary to correct it by other means").

360. See DSHEA, Pub. L. No. 103-417, § 2(14), 108 Stat. 4325, 4326 (1994) (finding dietary supplements extremely safe within a broad range of intakes and safety problems with the supplements are relatively rare).

361. See *supra* notes 95-100 and accompanying text (discussing FDA efforts to warn supplement manufacturers about the risks of BSE posed by dietary supplements).

362. See *supra* notes 40-41 and accompanying text (indicating the incurable nature of TSEs and describing the horrible death).

363. See *supra* Part I.C (establishing the risks of BSE posed by dietary supplements).

364. See *supra* Part III.A (exploring the difficulties gathering evidence related to TSEs); see also *supra* notes 343-52 (determining that estimating the actual risk posed in numbers would be impossible at this time).

too late for consumers who had already been exposed to BSE for up to thirty years of supplement use.³⁶⁵ Even then, it might be difficult for the FDA to meet its burden of proof linking a person's disease to a supplement consumed some thirty years earlier.³⁶⁶

IV. RECOMMENDATIONS

The FDA's history of regulating the dietary supplement industry and its attempts to implement more stringent regulations has led consumers, the dietary supplement industry, and Congress to distrust the Agency's motives.³⁶⁷ For this reason, a complete repeal of DSHEA³⁶⁸ would probably be met with extreme resistance for fear of returning to the FDA's regulatory attempts of the past.³⁶⁹ On the other hand, consumers cannot rely solely on the dietary supplement industry to provide protection against BSE because liability of manufacturers is tenuous due to the nature of the disease.³⁷⁰ In addition, the threat of negative effects on the market has produced few if any protections in other industry areas similarly threatened by BSE.³⁷¹ Therefore, a legislative change is necessary in order to

365. See *supra* note 39 and accompanying text (relating the possible thirty year incubation period for human TSEs).

366. See *supra* note 263 and accompanying text (recognizing difficulties associated with determining source of human TSEs).

367. See *supra* Part II.A (describing the history of dietary supplement regulations by the FDA and Congress' response at the urging of consumers and the dietary supplement industry).

368. See Lurie, *supra* note 4, at 2 (suggesting that the best way to begin protecting dietary supplement consumers from BSE would be if the FDA went "to the Congress to undo the damage done by DSHEA. The best option would be to simply repeal DSHEA.").

369. See *supra* Part II.A (outlining the past regulatory attempts of the FDA).

370. Liability would be difficult to establish because of the inherent problems with trying to link a case of vCJD to dietary supplements consumed up to thirty years before the onset of illness. See *supra* notes 261-64 and accompanying text (indicating various lengths of incubation periods). Evidence of the infecting product would be long gone and dietary supplement manufacturers would be further shielded from liability by the possibilities of other causes of infection such as beef, surgical procedures, or vaccines. See *supra* notes 261-64 and accompanying text (noting difficulties in discovering information regarding TSEs).

371. A large number of feed mills have consistently failed to comply with regulations aimed at protecting U.S. cattle from BSE. See Steve Stecklow, *Porous Borders: Despite Assurances, U.S. Could Be at Risk For Mad-Cow Disease*, WALL ST. J., Nov. 28, 2001, at A6. An outbreak of BSE could be directly attributed to feed mills and a severe reduction in U.S. beef consumption would have a large economic effect on the industry, yet preventive measures have been resisted. See *id.* at A1. Animal protein imports provide additional evidence that U.S. industries have been unmotivated by the possibility of negative market effects. See *id.* at A1. Imports of animal by-products from high-risk BSE countries have remained steady despite import bans and wide publicity regarding the risks of mad cow disease. See *id.* at A1, A6; see also *supra* notes 29 and 84 (highlighting feed mill compliance problems in the United Kingdom and the United States).

authorize the FDA to protect dietary supplement consumers from BSE and other future unknown health risks.³⁷² At the same time, consumer access to dietary supplements and their associated health benefits should be protected.³⁷³

The most obvious difficulty facing the FDA in regulating dietary supplements after DSHEA is the fact that the FDA has the burden of proving supplements adulterated.³⁷⁴ One solution to this obstacle in dietary supplement regulation would be to amend the FDCA in order to allow the burden of proof to shift to manufacturers once the FDA has presented sufficient evidence to establish that a potentially serious public health concern exists. Under this proposal, once the FDA has presented proof of scientifically valid and serious health concerns, manufacturers would be required to provide evidence to rebut the FDA's evidence.³⁷⁵

This solution is not likely to satisfy Congress, the supplement industry, or many consumers.³⁷⁶ Historically, the FDA would classify dietary supplements it wished to regulate as food additives.³⁷⁷ Providing very little evidence the burden would shift to the supplement manufacturer to prove the safety of the product.³⁷⁸ For manufacturers, gathering this evidence was prohibitively lengthy and

372. See *supra* Part III (analyzing the difficulties facing the FDA in its protection of consumers from dangers posed by dietary supplements).

373. See *supra* Part II (showing how consumer access to a wide variety of dietary supplements, including herbs, and high potency vitamins was restricted for decades and how DSHEA increased the availability of supplements on the market).

374. See *supra* Part III.A (illustrating the difficulties facing the FDA in meeting its burden of proof under DSHEA).

375. In the case of BSE, the FDA would have to prove that a risk exists if supplements are made with bovine ingredients from BSE infected countries. See S. REP. NO. 103-410, at 21 (1994) (stating that a dietary supplement should be lawfully marketed unless the FDA demonstrates by a preponderance of the evidence that the supplement is unsafe). The FDA would also have to provide evidence that high-risk bovine ingredients are entering the country for use by manufacturers or in completed supplement form. See *id.* Once sufficient evidence is gathered to prove that a serious health concern exists, a manufacturer would simply have to present evidence, such as sales slips, that its bovine materials were acquired from non-BSE infected countries and marketing of the product could continue. See *id.* In the case of ephedrine alkaloids the shift might be more burdensome on manufacturers to prove safety and this is where protests might arise. See *id.* at 21-22 (highlighting congressional disapproval of the FDA's hindering of dietary supplement production by requiring manufacturer's to bear the burden of proof of showing that a dietary supplement is adulterated).

376. See *infra* text accompanying notes 377-84 (considering why a shifting burden of proof will be considered problematic).

377. See *supra* notes 159-61 and accompanying text (discussing the food additive approach used by the FDA to keep dietary supplements off the market).

378. See *supra* note 161 and accompanying text (describing the limited evidence needed to classify a dietary supplement ingredient as not generally recognized as safe).

expensive.³⁷⁹ Often the threat of this process was enough to keep manufacturers from marketing products, effectively limiting consumer access.³⁸⁰ Even if, before burden shifted to the manufacturer, the FDA was required to provide more substantial evidence than was required when dietary supplements were classified as food additives, the burden on manufacturers might be too prohibitive to be acceptable to proponents of DSHEA.³⁸¹ For example, in the case of ephedrine alkaloids, had the burden simply switched to manufacturers following the FDA's proposed rules,³⁸² many manufacturers might not have been able to bear the cost of gathering sufficient scientifically valid evidence to prove the safety of their products and might instead opt for removing the product from the market.³⁸³ This action is one of the effects Congress wished to eliminate by enacting DSHEA.³⁸⁴

A less prohibitive means for allowing the FDA a reasonable opportunity to gather evidence needs to be established, because it is unrealistic that the FDCA would be amended to allow for a shift in the burden of proof.³⁸⁵ First, the FDCA should be amended to require all manufacturers of dietary supplements to register and keep up-to-date identification information with the FDA.³⁸⁶ No reasonable argument exists for not requiring this measure.³⁸⁷ Such a measure

379. See *supra* notes 162-63 and accompanying text (placing costs for a food additive application approval at up to two million dollars over the two to six year process).

380. See *supra* note 163 (discussing the food additive approach to dietary supplement regulation).

381. See *supra* note 375 (presenting reasons a shift in the burden of proof might not be acceptable).

382. FDA clearly met the burden of proving that a health concern exists. See *Dietary Supplements: Uncertainties in Analyses Underlying FDA's Proposed Rule on Ephedrine Alkaloids*, GEN. ACCT. OFF. REP. NO. GGD-99-90 (July 2, 1999) (acknowledging the validity of the FDA's concern regarding ephedrine alkaloids and the similar conclusions reached by outside scientific studies, but still finding the FDA's science lacking), available at <http://www.gao.gov/archive/1999/h299090.pdf>.

383. See *supra* notes 162-64 and accompanying text (showing how manufacturers are discouraged from marketing certain products by bringing cases against individual manufacturers rather than issuing regulations applicable to all manufacturers, thereby hindering customer access to dietary supplements).

384. See S. REP. NO. 103-410, at 21 (1994) (discussing the effects of allowing manufacturers to produce any dietary supplement without fear of having to spend years and millions of dollars to defend product safety, therefore, encouraging the expansion of the supplement market as evidenced by the dramatic increase in the dietary supplement market following the enactment of DSHEA).

385. See *supra* notes 376-84 and accompanying text (outlining why shifting the burden of proof to manufacturers after the FDA meets its initial burden is contrary to Congress' intent).

386. See *Adverse Event Reporting*, *supra* note 5, at 6 (stating that such registration is required by drug and infant formula manufacturers).

387. See *infra* notes 388-99 and accompanying text (explaining the benefits to both the FDA and manufacturers of requiring companies to register with the FDA).

would not be overly burdensome on manufacturers, especially with the advent of the Internet, which could allow for online registration.³⁸⁸

Registration would provide the FDA with a database, which would help the Agency ensure that all manufacturers were alerted to any potential health concerns.³⁸⁹ For example, the FDA has sent several letters to manufacturers concerning the risk of BSE and supplements,³⁹⁰ but there is no way for the FDA currently to ensure that its warnings have reached all manufacturers.³⁹¹ Registration would also help facilitate the FDA's inspections of manufacturing facilities because without registration the FDA is not aware of all the dietary supplement companies that exist, or their locations.³⁹² The FDA has had problems locating manufacturers in the past and registration would make decisions of where to inspect a more informed and fair process.³⁹³ Finally, the registration of manufacturers would help increase the reliability of the data collected through the FDA's adverse event reporting system.³⁹⁴ The FDA would be able to ascertain information about a product's manufacturer even if the consumer reporting the adverse reactions could only provide a company name.³⁹⁵ Also, if registration were required, the FDA would be more likely to find the manufacturer if a product's label failed to include the manufacturer's address or the manufacturer moved.³⁹⁶

388. See *Adverse Event Reporting*, *supra* note 5, at 21 (stating that the FDA could easily set up web-based registration if such registration became required).

389. See *id.* (recognizing that registration would facilitate communication between the FDA and manufacturers regarding all matters including safety concerns).

390. See *supra* notes 95-100 and accompanying text (describing the FDA's efforts to inform manufacturers of the BSE risks posed by bovine ingredients used in dietary supplements, which ultimately led the FDA to request that manufacturers refrain from using bovine materials).

391. See FOOD COMPLIANCE PROGRAM, *supra* note 50, at Attachment B (indicating that the FDA is utilizing a questionnaire on inspection to assess whether manufacturers are aware of its warnings).

392. Registration would increase the ability of the FDA to carry out its facility inspection plans and, at the same time, increase manufacturer liability to produce safe products because anonymity would no longer exist. See FOOD COMPLIANCE PROGRAM, *supra* note 50. Currently, the FDA has to rely on local officials when identifying the existence of dietary supplement manufacturers. See *id.*

393. See FOOD COMPLIANCE PROGRAM, *supra* note 50 (describing the method used to find manufacturers); see also *Adverse Event Reporting*, *supra* note 5, at 13-14 (noting problems encountered by the FDA in locating specific manufacturers).

394. See *supra* notes 255-59 and accompanying text (analyzing the limitations of the primary data collection tool used by the FDA because of the lack of a manufacturer registration requirement).

395. See *supra* notes 255-59 and accompanying text (describing problems encountered by the FDA, such as unreliable data, inability to identify manufacturers, and inability to track down manufacturers).

396. See *supra* note 258 and accompanying text (highlighting FDA's prior

Registration should also satisfy manufacturers, some of which have complained that the FDA fails to keep them informed of adverse reactions to their products.³⁹⁷ Manufacturers have no valid arguments for resisting registration because it would impose little or no cost on them and would provide them with benefits as well.³⁹⁸ Companies would receive information regarding adverse events associated with their products, thereby allowing them to correct product problems that might otherwise subject manufacturers to future liability.³⁹⁹ Consumers would also have increased confidence in the safety of dietary supplement products without restricting access.

A second solution to the FDA's difficulties in evidence gathering would be to amend the FDCA to require manufacturers to list their products with the FDA.⁴⁰⁰ Manufacturers should be required to provide all product names, ingredients and copies of labels to the FDA.⁴⁰¹ This requirement, much like mandatory registration of dietary supplement manufacturers, would not be overly burdensome to manufacturers, but could entail simply sending a photocopy of a product's label to the FDA.⁴⁰² The benefits of this requirement would also be significant.⁴⁰³ The FDA would not have to go shopping in order to gather information about product ingredients and suggested doses.⁴⁰⁴ This process would free FDA resources to focus on gathering more valuable evidence regarding safety concerns.⁴⁰⁵ The FDA would also be able to link high-risk products with the manufacturer and

problems with locating manufacturers of specific supplements, because the manufacturers are no longer at their posted address).

397. See *Adverse Event Reporting*, *supra* note 5, at 14 (acknowledging receipt of complaints by manufacturers who claimed to have learned of adverse events associated with their products from media questions).

398. See *infra* text accompanying note 399 (elaborating on the benefits to manufacturers of requiring dietary supplement manufacturer registration).

399. Registration would allow manufacturers to respond more promptly to adverse reactions to their products instead of having to rely on the media to inform them of problems. See *Adverse Event Reporting*, *supra* note 5, at 14.

400. See *id.* at 6 (revealing that such registration is required for drug and infant formula manufacturers).

401. See *supra* notes 290-92 and accompanying text (describing how the information on the label was useful to the FDA in its effort to gather evidence concerning the adverse events associated with ephedrine alkaloids).

402. See *Adverse Event Reporting*, *supra* note 5, at 14 (considering the ease with which manufacturers could register with the FDA).

403. See *infra* notes 404-09 and accompanying text (pondering the benefits of product listing and discussing negative aspects of the current process).

404. See Dietary Supplements Containing Ephedrine Alkaloids, 62 Fed. Reg. 30,678, 30,679 (proposed June 4, 1997) (explaining that the FDA had to go to various stores in order to gather information regarding supplements containing ephedrine alkaloids).

405. See *id.* (noting that it took the FDA two years to collect sufficient samples of ephedrine alkaloids).

communicate health concerns more effectively.⁴⁰⁶ For example, the FDA could send targeted letters of recommendation to manufacturers linking specific products with the risks they pose and offering advice on ways to protect against harms. As with manufacturer registration, having product information available to the FDA would also make facilities inspections more efficient and effective.⁴⁰⁷ The FDA prioritizes the facilities it wishes to inspect based on the products that the manufacturers produce.⁴⁰⁸ Substantial product information would aid the FDA in determining which manufacturers fall into its highest priority category and allow the Agency to inspect accordingly.⁴⁰⁹

Another solution to the FDA's difficulties in gathering evidence would be to require manufacturers to report adverse events to the FDA.⁴¹⁰ Such mandatory reporting would provide the FDA with a more realistic figure of adverse events.⁴¹¹ In turn, this would increase the reliability of the data collected by the adverse event reporting system.⁴¹² A more reliable source of data would help the FDA meet its burden of proof, which is a large obstacle to dietary supplement regulation.⁴¹³

In addition to the above changes to the FDCA, the FDA should focus on gathering as much information as possible regarding the

406. See *Adverse Event Reporting*, *supra* note 5, at 12 (noting that for thirty-two percent of adverse event reports, the FDA did not know the products' ingredients, and for seventy-seven percent of the reports, the FDA could not get a copy of the product label, which is an important aspect in gathering information because supplements of the same name often can be produced with different formulations at different times).

407. See *infra* notes 408-09 and accompanying text (explaining how inspections would be more productive as a result of manufacturers listing products with the FDA).

408. See FOOD COMPLIANCE PROGRAM, *supra* note 50, at Part II.B (ranking firms producing (1) dietary supplements containing botanicals, animal and plant extracts, fats and lipid substances; and (2) dietary supplements containing vitamins, minerals and proteins as the top inspection priority; firms producing only dietary supplements in category 1 are ranked as second priority for inspection and firms producing only dietary supplements in category 2 as third priority).

409. See *id.* (indicating a need for information regarding products in order to determine where manufacturers are ranked in the inspection priority scale).

410. See *Adverse Event Reporting*, *supra* note 5, at 6 (illustrating that mandatory adverse event reporting is required by manufacturers of drugs, infant formula, and some food additives).

411. See *supra* notes 250-51 and accompanying text (portraying the extremely small number of adverse events that are reported due to the voluntary nature of the system).

412. See *supra* note 259 and accompanying text (stating that the under reporting of adverse events contributes to the unreliability of the data collected from the system).

413. See *supra* Part III.A (describing the difficulties facing the FDA in meeting its burden of proof).

health risks posed by BSE in dietary supplements. The agency should propose a rule to require manufacturers to label products with a warning statement that the FDA cannot guarantee the country of origin of a product's bovine ingredients. As part of this regulation, the FDA could allow for manufacturers to provide evidence that their bovine products originated from a non-BSE infected country, thereby eliminating the need for a warning statement. Such limited regulation of supplement manufacturers is likely to produce less resistance and might require less evidence from the FDA.⁴¹⁴ If such limited regulation met with resistance, Congress should pass BSE-specific legislation prohibiting the use of bovine ingredients from high-risk countries in dietary supplements.

It is unfortunate that Congress feels it cannot trust the FDA to regulate supplements without hindering consumer access to the health benefits of supplements.⁴¹⁵ In the past, the FDA regulated amounts of vitamins and minerals contained in safe supplements simply because it did not want to perpetuate negative views of the U.S. food supply and it did not recognize a need for higher amounts of vitamins or minerals.⁴¹⁶ If the FDA had stuck to restricting supplements only when health problems existed, the agency might not find itself in the difficult position it is in today: facing a potential health crisis, without power to act.

414. *See* Dietary Supplements Containing Ephedrine Alkaloids; Withdrawal in Part, 65 Fed. Reg. 17,474, 17,476 (Apr. 3, 2000) (to be codified at 21 C.F.R. pt. 111) (refusing to withdraw proposed rules requiring warning statements on supplements containing ephedrine alkaloids despite withdrawing most of its proposed rules because of protests regarding the sufficiency of the FDA's evidence).

415. *See generally supra* Part II (describing the need for DSHEA and the FDA's ability to regulate dietary supplements).

416. *See supra* Part II.A (providing the regulatory history of dietary supplements including the reasoning behind FDA proposed regulations).