

THE CRANBERRY SCARE OF 1959:
THE BEGINNING OF THE END OF THE DELANEY CLAUSE

A Dissertation

by

MARK RYAN JANZEN

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2010

Major Subject: History

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Approved by:

Chair of Committee, Jonathan Coopersmith

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ABSTRACT

The Cranberry Scare of 1959:

The Beginning of the End of the Delaney Clause. (December 2010)

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Chair of Advisory Committee: Dr. Jonathan Coopersmith

The cranberry scare of 1959 was the first food scare in the United States involving food additives to have a national impact. It was also the first event to test the Delaney clause, part of a 1958 amendment to the 1938 Food, Drug and Cosmetics Act prohibiting cancer-causing chemicals in food.

Although lasting only a few weeks, the scare significantly affected the cranberry industry and brought the regulation of chemical residues in food to the national stage. Generated by a complex interaction of legislation, technology, media, and science, the scare had far-reaching effects in all areas of the cranberry industry, food legislation, and the perception of the public toward additives and residues in their food. The ripples caused by the scare permanently altered the cranberry industry and, after numerous subsequent scares and challenges to the law, eventually resulted in the repeal of the Delaney clause.

The goal of this investigation was to demonstrate how the social, scientific, and political climates in the United States interacted and led to such an event. It shows how

science, politics, and contemporary social anxiety combined, with technology as a catalyst, and how the resulting scare left significant marks on the development of both legislation and industry. It also improves our understanding of this seminal event in American social history by exploring the events surrounding the scare, as well as by comparing the perspectives and reactions of the public, the Eisenhower administration, the cranberry industry, and other industries affected by the scare and its aftermath.

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Thanks to my family and friends who have supported my efforts throughout all of the intervening years and events. My mother and father, Myron and Betty Janzen, were instrumental in my completion of the project. Thanks also to the faculty and staff of Wichita State University and the Ulrich Museum of Art for their generous time and support.

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CHAPTER I

INTRODUCTION

The risk of disruption of agriculture and the food industries if the recognized health hazard gets blown out of proportion by ‘scare journalism’ before sound answers from all points of view can be found.¹

The cranberry scare of 1959, a nationwide food scare concerning contamination in cranberries by the synthetic chemical aminotriazole (C₂H₄N₄), was an important historical event for several reasons. As the first major food scare involving chemically contaminated food, it served as a model for social and governmental interaction on such issues. The scare was also a first test of the functionality and acceptability of the 1958 Delaney clause, a specific clause in the 1958 Food Additives Amendment that banned any use of cancer causing chemicals in food for human consumption. The clause was named for Congressman James Delaney (D-NY) who, as a staunch supporter of the protection of food from chemical contamination, was the primary force behind its passage. Although the immediate impact of the cranberry scare on American minds was brief and there was no known physical harm resulting from aminotriazole exposure, the event demonstrated a critically important combination of several social factors generating a broad, society-wide response.

This dissertation follows the style of the *Journal of American History*.

¹ Untitled memorandum, January 31, 1959, Don Paarlberg Files, box 5, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1.

Administrative and public responses, as well as media characterizations, placed the notion of a “food scare” into the American public consciousness and helped set the tone for media, administrative, and public interactions in future scares. Scares involving adulteration of food, chemical contamination, and technological misunderstanding became common in American society. General distrust of chemicals and their presence in food, as well as distrust of the motivations of government and industry, generated cranberry scare-like responses into the 21st century. The cranberry scare was an early manifestation of that collective concern, and the combination of circumstances surrounding it remains a good example of why scares continued to occur.²

The cranberry scare was the beginning of the end of the Delaney clause. As the first test of the clause’s complete restriction against the use of carcinogens in food, the cranberry scare demonstrated that the no-tolerance concept was politically and scientifically controversial and its administrative handling needed improvement. Consideration of the problem took 40 years, encompassed numerous carcinogen scares, and witnessed the creation of several new regulatory bodies, including the Environmental Protection Agency (EPA) in 1970, the Animal and Plant Health Inspection Service (APHIS) in 1972, and the Food Safety Quality Service (FSQS) in 1977, which became the Food Safety and Inspection Service (FSIS) in 1981. The repeal of the Delaney clause in 1996 altered Food and Drug Administration (FDA) and EPA

² Julian Morris and Roger Bate, *Fearing Food: Risk, Health and Environment* (Boston, MA: Butterworth Heinemann, 1999), 141-67.

regulatory procedures to allow for scientific judgment in setting tolerances, supporting the original scientific arguments against its addition to the Food Additives Amendment.

The Eisenhower administration dealt with the cranberry scare. Well before the scare, the Eisenhower administration was aware of the potential problem of chemicals in food as well as the possible consequences to the public and industries. The White House predicted the panic caused by the scare while discussing potential problems with the discovery of harmful chemical residues in milk, but offered no immediate solutions to the problem.³

This analysis is divided into several chapters designed to demonstrate the interaction of the historical forces generating the scare. In Chapter II, a history of the cranberry industry provides background for the social and economic circumstances of the scare. Chapter III discusses the legislative genesis of the cranberry scare, explains the science and technologies involved in cranberry production and shows how they played crucial roles in the scare. An exploration of the American social consciousness of 1959 in Chapter IV helps understand how various factors combined to create a public panic. A description of the events during the scare ties the factors together in Chapter V, and Chapter VI offers an analysis of the media and public responses to the scare. The conclusion discusses the aftermath of the scare and some of the historical ripples it generated. Appendix A provides a timeline of the major events of the scare, and

³ Confidential memorandum, January 31, 1959, Don Paarlberg Files, box 5, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1.

Appendix B presents a list of subsequent Delaney-like scares through repeal of the clause in 1996.

Both primary and secondary sources contain valuable evidence of how and why the cranberry scare occurred. The secondary sources discuss what happened during the scare but rarely look at why it happened. A variety of books and journal articles in history, anthropology, science, and medicine mention the cranberry scare in reference to the Delaney clause or carcinogen regulation, but few mention more than the proximity of the scare to Thanksgiving and some damage to the cranberry industry.

Three works, Paul Eck's *The American Cranberry* (1990), Dave Engel's *Cranmoor: The Cranberry El Dorado* (2004) and Joseph Thomas' *Cranberry Harvest: A History of Cranberry Growing in Massachusetts* (1990) provide a good history of cranberries and the cranberry industry.⁴ Works, such as Wallace Janssen's *The U.S. Food and Drug Law: How It Came, How It Works* (1985) and Meredith Hickman's *The Food and Drug Administration (FDA)* (2003), focus on the history of the FDA and food law in the United States.⁵

Many books and articles look at the science, social and technology issues involved in the scare. Articles in scientific journals, such as *Science*, occasionally include some basic analysis of the events, with most focusing on the Delaney clause and

⁴ Paul Eck, *The American Cranberry* (New Brunswick: Rutgers University Press, 1990); Dave Engel, *Cranmoor: The Cranberry Eldorado* (Rudolph, WI: River City Memoirs, 2004); Joseph D. Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, (New Bedford, MA: Spinner Publications, 1990).

⁵ Wallace F. Janssen and United States. Food and Drug Administration., *The U.S. Food and Drug Law: How It Came, How It Works* (Rockville, MD: U.S. Dept. of Health and Human Service, Food and Drug Administration, 1985) and Meredith A. Hickmann, *The Food and Drug Administration (FDA)* (New York: Nova Science Publishers, 2003).

its merits regarding chemical analysis for human consumption.⁶ Biomedical journals, such as the *American Journal of Hospital Pharmacology*, mention the scare as historical background for the use of cranberries as a healthful alternative for several medical conditions.⁷ Legal journals, such as the *California Law Review* and the *Food and Drug Law Journal*, consistently focus on the scare as the first test of the Delaney clause in its long and controversial history.⁸ No single work focuses entirely on the scare.

Five major secondary works provide the historical background of food and the general state of fear concerning food in the United States. Andrea Arnold and Jay Sandlin's *Fear of Food: Environmentalist Scams, Media Mendacity and the Law of Disparagement* (1990), Madeleine Ferrières *Mad Cow, Sacred Cow: A History of Food Fears* (2006), Michelle Stacey's *Consumed: Why Americans Love, Hate, and Fear Food* (1994), and Julian Morris and Roger Bate's *Fearing Food: Risk, Health, and Environment* (1999) develop the concept of how and why people fear food in different ways.⁹ Corey Robin's *Fear: The History of a Political Idea* (2004) discusses the connection between fear and politics.¹⁰

The most illuminating resources detailing the cranberry scare and its background are primary sources. Papers from the Eisenhower Presidential Library provide detailed

⁶ T. H. Jukes and C. B. Shaffer, "Antithyroid Effects of Aminotriazole," *Science* 132, no. 3422 (1960), 296-7.

⁷ B. G. Hughes and L. D. Lawson, "Nutritional Content of Cranberry Products," *Am J Hosp Pharm* 46, no. 6 (1989).

⁸ Charles H. Blank, "The Delaney Clause: Technical Naïveté and Scientific Advocacy in the Formulation of Public Health Policies," *California Law Review* 62, no. 4 (1974); Frederick H. Degnan and W. Gary Flamm, "Living with and Reforming the Delaney Clause," *Food and Drug Law Journal* 50, no. 2 (1995).

⁹ Andrea Arnold and Jay Sandlin, *Fear of Food: Environmentalist Scams, Media Mendacity, and the Law of Disparagement*, 1st ed. (Bellevue, WA: Free Enterprise Press : Distributed by Merrill Press, 1990); Madeleine Ferrières, *Sacred Cow, Mad Cow: A History of Food Fears*, Arts and Traditions of the Table (New York: Columbia University Press, 2006); Michelle Stacey, *Consumed: Why Americans Love, Hate, and Fear Food* (New York: Simon & Schuster, 1994); Morris and Bate, *Fearing Food: Risk, Health and Environment*.

¹⁰ Corey Robin, *Fear: The History of a Political Idea* (New York: Oxford University Press, 2004).

information on the administrative reaction to the scare, as well as a view of the public response through letters and telegrams. Eisenhower Library documents include not only Presidential documents, but also documents bearing on the actions of Department of Health, Education and Welfare (HEW) Secretary Arthur Flemming, Secretary of Agriculture Ezra Benson, and other cabinet members. George Kistiakowski's *A Scientist at the White House: The Private Diary of President Eisenhower's Special Assistant for Science and Technology* (1976) offers personal insights into the scare from an individual who was directly involved.¹¹ Documents from the pre-Presidential collections of the John Fitzgerald Kennedy Presidential Library and the Richard M. Nixon Presidential Library provide perspectives on Congressional activity and support during the scare. The papers of Joseph Delaney, in the M.E. Grenander Department of Special Collections and Archives of the University at Albany, State University of New York, clarify his actions in creating and defending the Delaney clause.

Because the media reported the scare, newspapers are a primary source of information on public and media response. Suzanne White's dissertation "Chemistry and Controversy: Regulating Chemicals in Food, 1883-1959," was important for understanding FDA actions during the scare.¹² Many individual sections of the U.S. Code, as well as related hearings and inquiries, were critical to understanding the scare. Most of the information on the perspective of the cranberry industry and Ocean Spray comes from documents in the Wisconsin State Cranberry Growers Association archives

¹¹ George B. Kistiakowsky, *A Scientist at the White House: The Private Diary of President Eisenhower's Special Assistant for Science and Technology* (Cambridge: Harvard University Press, 1976).

¹² Suzanne Rebecca White and Emory University., "Chemistry and Controversy: Regulating the Use of Chemicals in Foods, 1883-1959" (Ph.D. diss., Emory University, 1994.).

in Wisconsin Rapids and Edward Lipman's *Labor of Love: My Life's Work with Cranberries and Ocean Spray* (1997).¹³ Secondary sources, such as Sharon Friedman, Sharon Dunwoody and Carol Rogers' *Communicating Uncertainty: Media Coverage of New and Controversial Science* and Ann Crigler's *The Psychology of Political Communication* helped to understand media interactions and risk assessment.¹⁴

This thesis adds to the history of the cranberry scare by going beyond description of the facts and events of the scare to consider the deeper roots of the scare in science, contemporary social tension, and political maneuvering. It incorporates information on the social environment in the late 1950s, the background of food legislation in the United States, and media technologies into the understanding of why the scare occurred. Consideration of the interrelationship between cancer fears, the Delaney Provision, scientific analysis, and media technology, as well as the perspectives of the Eisenhower administration and the cranberry industry are pivotal to our understanding of the cranberry scare as a pivotal event. Without investigation and understanding of these contributing factors, the cranberry scare remains a one-dimensional historical footnote largely overshadowed by international political struggles, wars, national race issues, and regional disasters.

¹³ Edward Voorhees Lipman and Ocean Spray Cranberries Inc., *Labor of Love: My Life's Work with Cranberries and Ocean Spray* (New Brunswick, NJ: The author, 1997).

¹⁴ Sharon M. Friedman, *Communicating Uncertainty: Media Coverage of New and Controversial Science* (Mahwah, NJ: Lawrence Erlbaum, 1999); Ann N. Crigler, *The Psychology of Political Communication* (Ann Arbor: University of Michigan Press, 1996).

CHAPTER II

ENVIRONMENT AND CULTIVATION OF THE AMERICAN CRANBERRY

This chapter explores the history of the American cranberry, its cultivation, and the bog environment. Much of the background of the cranberry scare of 1959 revolved around the environment and the plant's biology, which dictated the circumstances in which farmers operated. The biology of the plant and the history of its cultivation help explain why an herbicide like aminotriazole became the focus of attention in a cancer scare.

Biology and environment

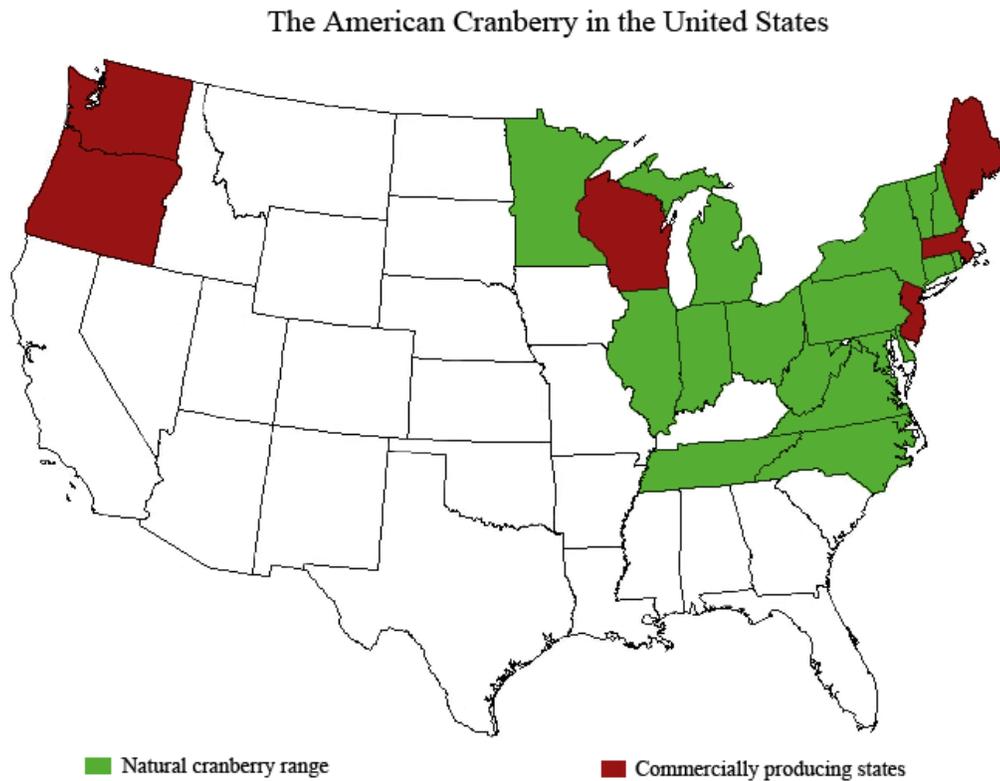
The genus *Vaccinium* is a large and varied group of plants, including blueberries, cowberries, snowberries, and cranberries. Although similar in form and development, each has different environmental and nutritional requirements and tends to be very sensitive to changes in environmental conditions. Varieties of cranberry are found all over the world from North America to Europe and Asia. Varieties include the lignonberry (*Vaccinium vitis-idaea*) in Europe and the small cranberry (*Vaccinium oxycoccus*) throughout Europe and Asia.¹⁵

The American version of the cranberry (*Vaccinium macrocarpon*) grows wild throughout the northeastern United States and southern Canada. Its natural range extends from Newfoundland south to Appalachian Tennessee and as far west as Wisconsin. Massachusetts, New Jersey, Maine, Wisconsin, Washington and Oregon dominate

¹⁵ Eck, *The American Cranberry*, 43-5.

cranberry production. West coast cranberries are outside the natural range of the American cranberry and are universally transplanted. *V. macrocarpon* is the only commercially cultivated species of cranberry, with more than 90% of the producing bogs within the United States, and is the primary source for cranberry juice and sauces on the worldwide market (See Figure 1).¹⁶

Figure 1: Map of the main cranberry growing regions in the United States



¹⁶ Ibid., 43-4.

The large American cranberry is a perennial evergreen vine that produces low, dense, and trailing patches of vegetation. The woody stemmed vines consist of several lateral runners, which can exceed two meters if left undisturbed. Periodic vertical stems originate from the leaf axils and often reach five to twenty centimeters in height. Half of such uprights develop several flowers along their length, but the rest of the uprights remain infertile. Each flower can produce one berry, although growers consider two berries per upright, or roughly one-third of the flowers, productive.¹⁷

Regional variations in productivity and acreage under cultivation shaped the market and the relative impact of technologies and agricultural innovations. The Wisconsin growing region was often the first region to adopt new technologies and to implement new growing and harvesting practices because of its large natural acreage and the freedom to experiment with new techniques without disturbing production. More established growing areas, such as those in Massachusetts, were too widely dispersed to effectively apply many new technologies without extensive bog redesign. This trend toward technological integration resulted in significantly higher average annual yields per acre from Wisconsin bogs.¹⁸

¹⁷ Ibid., 49-55.

¹⁸ Engel, *Cranmoor: The Cranberry Eldorado*, 110-25.

Table 1: Cranberry-producing acreage by state, 1948-1969

Growing Region	Acres/percent of total production			
	1948-57	1958	1959	1969
Massachusetts	14,080/58%	12,900/62%	12,800/60%	11,100/52%
New Jersey	5,320/22%	2,500/12%	2,800/13%	3,000/14%
Wisconsin	3,630/15%	4,100/20%	4,200/20%	5,400/25%
Washington	790/3%	900/4%	1,000/5%	1,000/5%
Oregon	422/2%	520/2%	540/2%	745/4%
Average total	24,242	20,920	21,340	21,185

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Production in all of the growing regions grew steadily from the 1940s through the scare. The relative percentages of the overall crop generated by each region shifted to varying degrees, with a large decrease in the Massachusetts region and a large increase in the Wisconsin region (See Tables 1 and 2). Technologically advanced bogs in Wisconsin outpaced older bogs on the East Coast, despite Wisconsin's smaller cultivated acreage. The cranberry industry experienced a steady decline in acreage harvested from the boom times of World War I, when wartime consumption drove prices to all-time highs, but the steadily increasing productivity of the remaining acreage meant increased overall production. The 1959 scare increased this acreage reduction trend, forcing the industry to its lowest point since 1900.²⁰

¹⁹ United States. Dept. of Agriculture., *Agricultural Statistics*, 1936- ed. (Washington, D.C.: U.S. Govt. Print. Off.), 1960, 180-1; *ibid.*, 1975, 231.

²⁰ Eck, *The American Cranberry*, 19-28.

Table 2: Cranberry production by state, 1948-1969

Growing Region	100 lb. barrels /percent of total production			
	1948-57	1958	1959	1969
Massachusetts	558,100/57%	598,000/51%	610,000/52%	755,000/41%
Wisconsin	256,100/26%	389,000/33%	405,000/35%	746,000/41%
New Jersey	85,900/9%	89,000/8%	110,000/9%	160,000/9%
Washington	53,460/5%	57,300/5%	94,500/8%	105,000/6%
Oregon	25,470/3%	32,300/3%	44,000/4%	57,100/3%
Total production	979,030	1,165,600	1,263,500	1,823,100

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Cranberries have very specific environmental and nutritional requirements which limit them to only a few natural locations. In particular they require peat bogs with acidic soil, consistent seasonal water availability, and good drainage characteristics for optimal growing environments. The shallow root structure of the vines thrives best in thin sandy soils, generally consisting of multiple layers of sand and decomposing vegetation. Relatively minimal nutritional requirements make large-scale fertilization unnecessary.²²

Pests, competition with other plant species, disease, and spring frosts are the most common problems in cultivating a cranberry bog. Numerous insects, mammals and birds feed on the ripe berries as well as the plants themselves. Other bog plants, including grasses, poison ivy, and asters, compete with the cranberry for nutrients, sunlight, and water. Bacterial and fungal diseases were also common in cranberry

²¹ United States. Dept. of Agriculture., *Agricultural Statistics*, 1960, 180-81; *ibid.*, 1970, 231.

²² Eck, *The American Cranberry*, 136-40.

patches. All four problems could seriously impair the productivity of a natural or constructed cranberry bog.²³

Optimum growth temperatures depend on the vine's stage of development. Cranberry vines, normally very cold resistant, were prone to frost damage at certain times in their developmental cycle. They require a certain number of hours between 32 and 45 degrees Fahrenheit to break their dormancy cycle and begin their flowering cycle, but a frost at the wrong time could reduce productivity. The vines also require significant periods of dryness and warmer temperatures to complete their cycle and to produce fruit.²⁴

The long-term sustainability of a cranberry bog depends on the quality and preservation of its wetland resources. Bogs naturally suitable for cranberry development are commonly part of swamp and wetland ecosystems. Complex systems of flood and drainage control are necessary to maintain the water quality while providing enough water for cranberry production. Such regions, which are common in central Wisconsin and along the Eastern United States, are very sensitive environmentally and demand careful management to protect both the cranberry environment and that of the supporting flora and fauna.²⁵

²³ Byron S. Peterson, Chester E. Cross, and Nathaniel Tilden, *The Cranberry Industry in Massachusetts* (Boston, MA: Dept. of Agriculture, Division of Markets, 1968), 16-52.

²⁴ Eck, *The American Cranberry*, 104-9.

²⁵ John Harker et al., *Cranberry Agriculture in Maine : A Grower's Guide*, (Orono, ME: University of Maine Cooperative Extension, 1997), Chapter 12, 1-30.

Consumption and cultivation

The American cranberry has been an important food source for every recorded group living near North American cranberry-growing regions, as well as a profitable crop for more than two centuries. Native Americans, colonists, and generations of Americans have valued their taste, healthful properties, and natural abundance. As a traditional holiday food, cranberries have held a special place in American social history.²⁶

The first known use of the word "cranberries" in English occurred in a letter by the missionary John Eliot in 1647.²⁷ The word cranberries, originally "craneberries", came from the appearance of the plant's flowers, which closely resembled the heads of cranes. The fruit was highly sought after by cranes and other birds of the coastal regions, and it would have been natural to associate the two. In 1617, Captain John Smith mentioned an unknown variety of red berry in his log. Growing abundantly in the area that would become Massachusetts, they were likely cranberries. Cranberries were also referred to by early Americans as bearberries, reflecting the dominant wildlife consumer of the ripe berries.²⁸

Early American documents included descriptions of several Native American uses of the cranberry. The native fruit was considered an important staple for the peoples who had access to bogs and was the source of a distinctive dye. The berries could be stored easily for long periods, and provided nutritious winter food. Native Americans ate

²⁶ Brownstone, Cecily, *Wisconsin Rapids Tribune*, "Be Different With Cranberries," p. 9, November 9, 1959

²⁷ Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, 18.

²⁸ Eck, *The American Cranberry*, 1-3.

the berries in raw, dried, and processed form. Pemmican, a mixture of cranberries and ground meat or fish made into dry cakes, became a common food on the frontier. Succotash, a mixture of corn, beans and cranberries, was a common traditional dish throughout the Northeast. Northeastern tribes, such as the Delaware, considered the cranberry a symbol of peace and friendship. The giving and eating of cranberries was a central element of any native feast of peace and community.²⁹

Cranberry consumption and use patterns by early settlers closely followed those of Native Americans. Early communities learned to use and trade their cranberry resources. A barrel or two of cranberries could bring a handsome sum and supplement a farming family's income in a subsistence environment. Cranberries often sold well in areas that did not have easy access to natural bogs and had large populations willing to use the berries.³⁰

The association of cranberries with fall feasting was not coincidental. Cranberries were typically harvested from September through November, depending upon the latitude and the variety of berry. Although there was no specific record of cranberries being a part of the first Thanksgiving feast, the fact that the berries were important to the native diet and food culture indicates they probably were present at such a momentous gathering.³¹

Cranberries were known to have significant medicinal properties in addition to their nutritional value. As a rich source of vitamin C and other nutrients, cranberries

²⁹ Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, 18-25.

³⁰ Eck, *The American Cranberry*, 1-13.

³¹ Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, 19-21.

were a good means of preventing the vitamin deficiency disease scurvy. Slightly laxative and mildly antibiotic, cranberries were common remedies for diarrhea, dysentery, and dropsy. Native Americans knew that poultices of crushed berries were effective against some bacterial skin infections and inflammatory tumors, commonly known as erysipelas or St. Anthony's fire, well before any medical understanding of antibacterial substances developed.³²

One major element of the early economics of cranberry gathering was that bogs were generally not useful for other forms of agriculture. Swampy and subject to periodic floods, the land was difficult to drain and not suitable for most crops. Many areas that supported cranberry bogs were also mined for iron ore, which formed naturally within the layers of peat as they filtered mineral-rich water. These sources of iron kept the early colonial forges running until colonists discovered larger traditional mines. Competition for land capable of producing both cranberries and valuable iron might have encouraged colonists to cultivate berries by exposing them to the berry's unique environment.³³

Cranberries quickly became an important gathered crop and were commonly exported to other colonies and England. Early legal concerns over ownership and land rights were common. There were laws against early picking, and some communities imposed fines for possession of berries out of season. Both healthful and profitable, cranberries moved quickly from a native novelty to a community necessity.³⁴

³² Charlotte Erichsen-Brown, *Medicinal and Other Uses of North American Plants : A Historical Survey with Special Reference to the Eastern Indian Tribes* (New York: Dover Publications, 1989), 206-7.

³³ Fredrika Alexander Burrows, *Cannonballs & Cranberries*, 1st ed. (Taunton, MA: W.S. Sullwold, 1976), 13-20.

³⁴ Eck, *The American Cranberry*, 1-14.

The earliest mentions of cranberry gathering by European settlers were always as community activities. Whole communities turned out to harvest cranberries. The picking of a ripe cranberry bog could last for days, and often took on a festival atmosphere. The labor-intensive activity of picking, cleaning, sorting, and packing the berries required many hands, and the processes changed very little through the 1700s and 1800s. Individuals involved in the picking were often paid in cranberries. Low-cost immigrant labor, largely of British and central European origin, in the early to mid-1800s took many of the tasks out of the hands of the general community. Some of the earliest commercialized cranberry growing efforts date from this period when cheap labor was combined with improved growing methods.³⁵

The earliest known cranberry cultivation efforts date from 1810. Henry Hall, a farmer, entrepreneur, and scientist, of Dennis, Massachusetts, recorded detailed observations of changes in the growth patterns and productivity of cranberries in response to environmental changes, such as wind-blown sand and periodic flooding. He also experimented with transplanting cuttings from one area to another to determine the best locations for maximum productivity. Hall's methodical development of an understanding of the cranberry and its environment led to the beginning of the industry.³⁶

Hall's discoveries made commercial bog development possible, and the number of bogs in Massachusetts skyrocketed over the next few decades. An 1855 agricultural

³⁵ Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, 13-20, 30-32.

³⁶ Eck, *The American Cranberry*, 4-5.

census of Barnstable County, Massachusetts, clearly shows how popular and lucrative cranberries were becoming. Growers devoted an estimated half of the available cranberry-producing acreage to cranberries and cranberry research.³⁷

Large-scale cranberry cultivation produced several environmental problems, which Hall learned to control. Experimentation with new bog development and harvesting methods drastically changed the local environment. As the natural plant diversity of the bogs decreased, insect and plant pests became increasingly damaging, as in many mono-crop endeavors. Without all of the natural plant and animal factors to provide barriers to disease and predation, the cranberries were too exposed to produce effectively. This led to the development of both natural and artificial repellents, insecticides and herbicides.³⁸

Early surveys of the New England flora recorded more than fifty sub-species of *V. macrocarpon*. Many were named for the appearance of the ripe berries, such as the bell, bugle, and cherry varieties. Hall and his associates selected several varieties for intensive cultivation based on their ripe color, size, general productivity, and resistance to insects and climate changes. Early Blacks, named for their early onset and very dark color, and three other variants, Howes, McFarlins and Searles, make up the “big four,” which have dominated the market since the turn of the twentieth century.³⁹ Family lines played an important part in the development of the cranberry industry as well as in the history of the crop. Early farmers named some popular cultivars for their originators, and

³⁷ Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, 14-15.

³⁸ Peterson, Cross, and Tilden, *The Cranberry Industry in Massachusetts*, 34-47.

³⁹ Eck, *The American Cranberry*, 56-59.

some of those original families still owned and operated bogs in the 1950s as family businesses tracing their lineage back many generations.⁴⁰

Cranberry cultivation in Wisconsin traces its history back to 1861, with the first laws restricting unauthorized picking of wild berries. Wisconsin bogs were perfectly located to serve the Midwest and Pacific states as rail distribution networks crisscrossed the nation.⁴¹ Cranberry farmers acquired and improved naturally producing bogs throughout the last part of the 19th century. Technically managed farms produced four times the volume of ripe berries per acre as their natural bog counterparts. Hall's research techniques provided techniques for modification and development of existing marshes. The 1920s witnessed the transition of Wisconsin bogs from traditional harvesting of wild berries to modern water harvesting techniques, which involves gathering floating berries off of a flooded bog. The development of several cooperatives and marketing firms through the 20th century spurred industrial development in the area by attracting processors, storage facilities and transportation.⁴²

Transplantation of cranberries to the west coast began in the early 1870s, but the initial bogs failed to produce. The first successful cultivated bog, modeled after similar bogs in Massachusetts, appeared in 1881 in the Long Beach, California, area. The two-decade gap between development of Wisconsin and West Coast bogs occurred because *V. Macrocarpon*'s natural range does not extend to the west coast of the United States.

⁴⁰ Lipman and Ocean Spray Cranberries Inc., *Labor of Love: My Life's Work with Cranberries and Ocean Spray*, 68-80.

⁴¹ Engel, *Cranmoor: The Cranberry Eldorado*, 10-27.

⁴² Henry F. Bain and Wisconsin Dept. of Agriculture. Division of Insect and Plant Disease Control, *Cranberry Industry in Wisconsin* (Madison, WI: Wisconsin Dept. of Agriculture, 1929), 10-24.

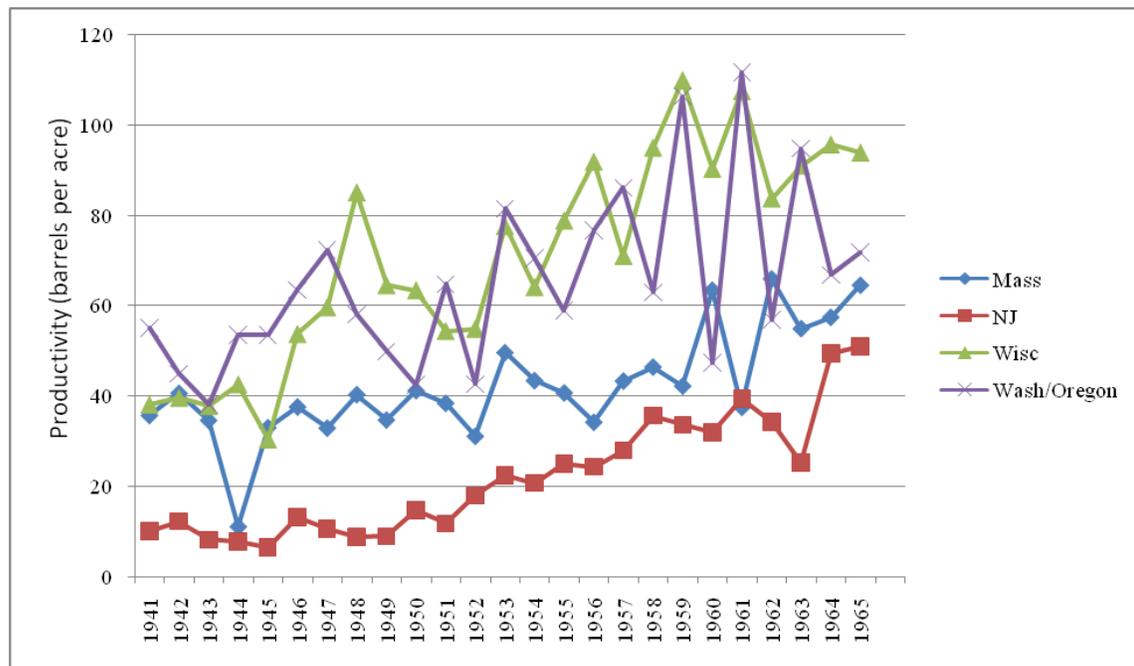
The region has many areas environmentally suitable for the species, if the land is properly prepared. Unfortunately, many insect and disease pests accompanied the original cuttings from the East Coast and Wisconsin. Without their natural predators and environments, many of them quickly became serious obstacles to successful production. Although the acreage and production totals of bogs in the Northwest have always remained a small percentage of the overall industry, Washington's absolute yield has grown steadily.⁴³

All growing areas showed increasing productivity per acre from the turn of the twentieth century through the cranberry scare. Northeast growing regions always dominated production at more than 60% of total production, with Wisconsin and the Northwest region competing for second. Although Washington and Oregon bogs consistently showed a much higher productivity per acre than either of the other two growing regions, their vastly smaller available acreage left them third in production volume (See Figures 1 and 2).⁴⁴ The high productivity rate in the Northwest, versus those in Wisconsin and Massachusetts, resulted from its cranberry farmers' use of bog design, technical improvements in planting and harvesting, as well as application of chemicals for control of plant and animal pests.⁴⁵

⁴³ Eck, *The American Cranberry*, 23-42.

⁴⁴ United States. Dept. of Agriculture., *Agricultural Statistics*, 1946, 161; *ibid.*, 1956, 143; *ibid.*, 1966, 213; *ibid.*, 1976, 200.

⁴⁵ Albert L. Seeman, "Cranberry Industry of the Pacific Coast," *Economic Geography* 17, no. 2 (1941), 180-86.

Figure 2: Regional cranberry productivity, 1940-1965

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In the mid-19th century, development of publications, organizations, and research created the infrastructure for the cranberry industry. Early publications provided potential entrepreneurs with the basic skills and understanding necessary for cranberry cultivation. The two most prominent publications, Benjamin Eastwood's *The Cranberry and Its Culture* (1856) and Joseph J. White's *Cranberry Culture* (1870) provided advice on bog placement and preparation, nutrition and water management practices, and insect and plant pest management, as well as harvest and storage requirements. In addition to being cranberry growers and researchers, Eastwood was a reverend and White was a

⁴⁶ Eck, *The American Cranberry*, 36-39.

machinist. Nineteenth and twentieth century versions of these instruction manuals included marketing and distribution advice.⁴⁷

Cranberry organizations and cooperatives made the difficult and labor intensive process of managing cranberry bogs easier and more effective. Local, state and national grower organizations developed to serve the needs of the growing cranberry community as the industry moved toward larger scale production. Cranberry farmers founded the earliest recorded organization, the American Cranberry Grower's Association (ACGA), in New Jersey in 1871, followed by the Wisconsin State Cranberry Grower's Association (WSCGA) in 1887, and the Cape Cod Cranberry Grower's Association (CCCGA) in 1888. Each regional organization served as a central administrative body for marketing, disseminating technical information, publication of reports and newsletters, and social interaction, while many regional cooperatives provided financial services to members.⁴⁸

Organizations and cooperatives formed, split and merged as the market and regional needs changed. The 1930 merger of the American Cranberry Exchange, one of the earliest cranberry cooperatives, with several other cooperative groups resulted in the formation of the National Cranberry Association (NCA).⁴⁹ Good leadership and aggressive marketing brought many other cooperatives and processing facilities under the company's control over the next three decades. The cooperative reorganized in

⁴⁷ Henry J. Franklin, George M. Darrow, and O. G. Malde, *Cranberry Harvesting and Handling* (Washington, D.C.: U.S. Dept. of Agriculture, 1924), 2-18.

⁴⁸ Eck, *The American Cranberry*, 11-18.

⁴⁹ Carol Young Mason, "The Geography of the Cranberry Industry in Southeastern Massachusetts" (Thesis, Clark University, 1925), 66-8.

August 1959, making the stock ownership by individual members proportional to their annual deliveries into the pool and changing the organization's name to Ocean Spray Cranberries, Inc. Although it occurred only two months before the scare, no evidence was found to indicate the change in leadership had any bearing on the industry's response to the scare. Ocean Spray was one of the primary organizations involved in the testing and litigation surrounding the cranberry scare, because it dominated cranberry sales and distribution with control of over 75% of the market in fresh and processed berries.⁵⁰

Farmers and cooperatives sold the vast majority of the annual cranberry crop up to 1959 as either canned sauce or fresh fruit. One of the earliest cranberry products marketed nationally was "Ruby Phosphate" jam in 1912.⁵¹ The percentage of the annual crop that was sold for processing increased from 17% in 1935 to 50% in 1955. This increase indicated a major shift in the way the cranberry industry dealt with the increasing amounts of available berries.⁵² Manufacturers made canned sauce by boiling the berries, removing the skins, then mixing the resulting juice slurry with sugar to reduce the tartness. The addition of flavors or thickeners produced the desired consistency and taste. Cooperative members processed both the fresh fruit and canned products, giving them a significant market advantage. Independent operation became

⁵⁰ Julius Eanet and United States. Congress. House. Committee on Interstate and Foreign Commerce. Special Subcommittee on Legislative Oversight., *The Cranberry Problem. Study for the Special Subcommittee on Legislative Oversight of the Committee on Interstate and Foreign Commerce, House of Representatives, Eighty-Sixth Congress, First Session* (Washington, D.C.: U.S. Govt. Print. Off., 1960), 29.

⁵¹ Burrows, *Cannonballs & Cranberries*, 84.

⁵² United States. Congress. Senate. Agriculture and Forestry Committee., *Cranberry Marketing Orders, Hearing before a Subcommittee Of ..., 85-1 on S. 1680 ..., April 29, 1957* (1957), 60-72.

increasingly difficult as large cooperatives, such as Ocean Spray, dominated the market and set prices.⁵³

Early cranberry farmers typically shipped berries grown in New England bogs in small quantities by wagon or barge.⁵⁴ Railroads commonly shipped berries to market after the 1850s, especially from Wisconsin bogs to East or West coast markets. The advent of the automobile and long distance trucking in the early twentieth century doomed a number of rail lines whose main purpose was seasonal cranberry transport.⁵⁵

Research has been one of the cornerstones of the cranberry industry since Henry Hall in 1810. Cultivar development, water management techniques, harvest technology, pest management, and technological development and testing have been the main recurring themes in cranberry research. As the industry developed, marketing, distribution, and research needs grew beyond the abilities of amateur entrepreneurs like Hall. State and regional research stations developed in response to the growing needs of the cranberry community, reflecting larger growth trends in industry, science, population, and education.⁵⁶

Research stations dedicated to cranberry production appeared in all of the major growing zones. The University of Massachusetts founded the Cranberry Experiment Station in 1910. The State College of Washington founded the Long Beach Cranberry

⁵³ Eck, *The American Cranberry*, 19-41.

⁵⁴ Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, 20-5.

⁵⁵ Engel, *Cranmoor: The Cranberry Eldorado*, 120-4.

⁵⁶ Eck, *The American Cranberry*, 1-18.

Research Station in 1923 to serve the West Coast cranberry community.⁵⁷ The Wisconsin Cranberry Board, Inc., part of the Wisconsin State Cranberry Grower's Association, charged a small sum from its producing members to fund research and marketing projects. In addition to the specialty cranberry stations, state agricultural experiment stations in cranberry producing areas played key roles in developing technologies specific to their regional needs. University departments, such as the horticulture department of the University of Wisconsin, Madison, played major research and educational roles.⁵⁸

In 1959, half a dozen major research facilities focused on cranberry production, in addition to projects by individuals and universities. The cranberry research facilities in each growing region played important roles in development of technology and best practices for the cranberry industry. Periodic publications and newsletters, such as *Cranberry Magazine* and Ocean Spray's newsletter *The Scoop*, helped keep both the consumer and the industry informed about new developments and technologies for harvesting and distribution.

These institutions greatly advanced the understanding of cranberries and technologies useful in their cultivation.⁵⁹ A good example of the technological innovations by the research stations involved the use of large volumes of water in the bogs. D. J. Crowley, farmer, cranberry researcher and director of the Long Beach Cranberry Research Station from 1923 through the 1950s, pioneered the use of artificial

⁵⁷ Pacific Coast Cranberry Research Foundation., *Pacific Coast Cranberries: The Cranberry Industry and Its History in Pacific County* (Long Beach, WA: The Foundation, 1997), 4.

⁵⁸ Eck, *The American Cranberry*, 11-18.

⁵⁹ Charles A. Doehlert, *Fertilizing Cranberries by Airplane*, Cranberry Fertilizer, 1-4.

sprinkler systems to prevent frost damage in 1925, theorizing that berries covered in frozen water would survive a frost that would wilt exposed berries. Frozen water released latent heat as it changed from liquid to solid, preventing the cranberries from going below freezing during a frost. His research and understanding of the nature of the berries as well as heat-generating reactions changed the nature of the industry. The sprinklers allowed farmers to continue to apply water to the bog as long as the frost lasted. Sprinkler-enhanced bogs have been standard since the 1930s, providing easier and more even watering than is possible with natural flood systems.⁶⁰

An offshoot of sprinkler systems was wet harvesting. In the 1920s, some bog owners speculated that they could use the same procedures for post-harvest flooding to float off debris and uncollected berries as well as for the primary harvest. A fortunate natural adaptation for distributing seeds made modern water harvesting feasible. A mature cranberry has several air pockets inside the fruit, called locules, which allow it to float. Many bogs were “water raked,” which involved a shallow flood and the use of hand rakes to gather floating berries missed during traditional harvesting. Wisconsin cranberry producers developed the full wet harvest in the 1930s as a result of both available water and advances in harvesting technologies. Vastly more efficient and productive than traditional harvesting methods, wet harvesting quickly dominated the market and was the harvesting method of 80% of the growers in 1959.⁶¹

⁶⁰ Pacific Coast Cranberry Research Foundation., *Pacific Coast Cranberries: The Cranberry Industry and Its History in Pacific County*, 33-37.

⁶¹ Eck, *The American Cranberry*, 43-55.

The movement of the cranberry industry toward scientific and systematic agricultural research accelerated the incorporation of the cranberry industry into the broader agricultural market. Smaller bogs were often unable to incorporate the newest technologies requiring expensive equipment or increased manpower, making them less competitive. Application of field research to ever-larger commercial bogs also began a trend toward increasing productivity per acre and the inclusion and upgrading of marginal or under-producing bogs that previously were too difficult to manage.⁶²

From 1890 through the mid-twentieth century, the cranberry remained an economically marginal agricultural product with limited public appeal. Cranberries were consumed almost entirely during the Thanksgiving and Christmas holidays, making the cranberry market extremely seasonal. Although critically important to the economies of cranberry growing regions, the cranberry industry contributed less than one tenth of 1% to overall national agricultural totals in crop value and volume.⁶³

Technology in cranberry production, 1930-1959

Technology was the central element in all aspects of bog management and cranberry production. Individual bogs were the focus of intense agricultural efforts throughout the year, including management of the water systems, weed, disease and pest prevention, fertilization, semi-annual sanding, and harvest. Post harvest activities, such as trimming, weeding, and flooding off debris, often required as much time and effort as

⁶² Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, 150-60.

⁶³ United States. Dept. of Agriculture., *Agricultural Statistics*, 1946,161.; *ibid.*, 1956, 143.; *ibid.*, 1966, 213.; *ibid.*, 1976, 200.

harvest itself. The goal of maximum productivity required the farmer's constant effort. Effective application of the most current planting and management methods was critical to remaining competitive in the cranberry market.⁶⁴

Bog engineering developed as a direct result of research and better understanding of the needs of the cranberry and its specialized environment. Sanding, grading, and water flow design began as simple procedures to adjust natural bogs and help the plants produce. Bog engineering combined traditional practices with modern university and experiment station research to maximize production. Experienced bog managers in addition to experienced farmers were increasingly necessary for the proper upkeep of existing bogs, as well as the planning, placement, and construction of new bogs.⁶⁵

The hydrology of a cranberry bog was the most critical technological hurdle in bog development. Cranberry crops had twice the water requirements of other temperate crops, requiring 6 acre feet or nearly two million gallons per acre annually (one acre foot of water = 325,851 gallons = 43,560 cubic feet). Each acre of bog was typically associated with two to four acres of support land, often taking the form of natural reservoir wetlands. This symbiotic relationship supported proper management of the wetlands by allowing the water to flow through periodically while providing the critical water resource for the cranberries. In addition to regular watering, bogs required at least one annual flooding in the spring for insect control and one flooding in winter to protect the vines from frost. Water harvesting in the fall required yet another flooding. Without

⁶⁴Eck, *The American Cranberry*, 11-18.

⁶⁵Harker et al., *Cranberry Agriculture in Maine : A Grower's Guide*, Chapter 12, 1-30.

access to inexpensive sources of renewable water, cranberry production was not economically feasible.⁶⁶

Around 1900, mechanical devices, including a “vine setter” which simply forced cuttings into the soft soil with a series of discs, replaced the time-consuming task of hand planting cranberry vines.⁶⁷ Farmers often built such devices by hand. Cuttings of a few specific varieties were used for commercial cranberry propagation; they were often gleaned from the annual cuttings of mature bogs. The plants grew well from seed, but the resulting vines took longer to develop and begin producing. Cranberries were self-pollinators, making efforts to increase yield through the introduction of pollinators unnecessary. The use of honeybees was common nonetheless because insect pollination and agitation increased productivity. A well planted and developed bog needed two and four years to begin producing marketable quantities of berries.⁶⁸

The technology of picking cranberries developed quickly as bogs increased in number and size. Early bogs were managed with simple hand-picking and raking. Both labor-intensive and time-consuming, hand-picking results in relatively low productivity in yield per worker hour but very high quality. Hand-picked berries were pre-sorted in the field for quality and ripeness, with unripe berries left for later harvesting, requiring multiple passes during the harvest season. The hand scoop or rake, invented around 1900, eventually replaced hand picking and enabled the development of the first large commercial bogs. Although scooping initially decreased productivity resulting from vine

⁶⁶ Eck, *The American Cranberry*, 170-90.

⁶⁷ Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, 108.

⁶⁸ Bain and Control., *Cranberry Industry in Wisconsin*, 10-11.

damage and missed berries, it reduced the number of workers required to harvest a given acreage. Eventually scoops and other mechanical devices matched or exceeded the productivity of experienced hand picking. Scooping technology and its limitations inspired further development into machine driven pickers.⁶⁹

Each successful innovation increased productivity from existing bogs and shaped the development of new bogs to capitalize on the new possibilities. A 1929 Wisconsin Department of Agriculture report stated that the industry was in a rapid transitional phase between the old and the new technologies.⁷⁰ A wide variety of experimental mechanical pickers and devices, such as the snap scoop (1928), electric weed whackers (1940s), and the Darlington picker (1950) were developed by cranberry experiment stations and innovative farmers. Inventors were always seeking the best combination of maximized collection, reduced fruit and vine damage, and mechanical efficiency.⁷¹

The processing of cranberries immediately after harvest has not changed significantly since the development of early commercial bogs. Cleaning and sorting of a cranberry harvest was critical to maintain consistent quality and color. Workers washed, dried, and sorted the berries before placing selected berries into storage containers.⁷² The early observation that ripe and sound berries bounced, whereas diseased or damaged berries were soft and generally broke, set the standard for cranberry inspection and

⁶⁹ C. A. Doehlert and New Jersey Agricultural Experiment Station, *Cranberry Picking Methods and Costs Per Barrel*, Cranberry Picking (1950), 1-4.

⁷⁰ Bain and Control., *Cranberry Industry in Wisconsin*, 5.

⁷¹ Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, 107-17.

⁷² United States. Dept. of Agriculture and H. F. Bain, *Harvesting and Handling Cultivated Cranberries*, Farmers' Bulletin, 15-24.

sorting. Mechanical sorters in 1959, based on the original concept first automated in 1880, employed agitated conveyor belt systems to detect the non-bouncing berries.⁷³

Storage and shipping of cranberries also changed over the decades. Cranberries deteriorated rapidly on the vine and in unprotected environments. However, they kept well packed in cold water and almost indefinitely if refrigerated or frozen. Freezing had little effect on the berries, which defrosted with minimal bruising or damage. Freezing and refrigeration of berries were increasingly common transportation and distribution technologies after 1900. In the 1940s, the cranberry industry began experiencing problems with large volumes of fruit being produced that were still available when the next crop was harvested. Fruit that was not sold or immediately processed was frozen for later distribution or processing.⁷⁴

The ability to preserve large volumes of berries not sold in their harvest year certainly exacerbated the carryover problem as production increased, but carryover and production were intricately related in cranberry growing. The simplest solution was to curtail some production, but cutting production meant loss of revenue for farmers. At the same time, farmers knew that stopping production destroyed the bog. Unpicked berries tend to rot on the vine, attracting unwanted insects and pests. The carryover problem was not a simple matter of production quotas or overproduction. The combination of

⁷³ Eck, *The American Cranberry*, 300-11.

⁷⁴ S. M. Ringel, Jacob Kaufman, and Mordechai J. Jaffe, *Refrigerated Storage of Cranberries*, Marketing Research Report ; (Washington, D.C.: Marketing Research Division, Agricultural Marketing Service, U.S. Dept. of Agriculture, 1959), 1-3, 16.

economic incentive and uncooperative berries created a situation for farmers that could only be solved through changes in distribution, marketing and use patterns.⁷⁵

Finding prompt shipping for their product was always a critical concern for cranberry growers. Transportation and distribution of cranberries followed the development of transportation in the United States. As new technologies opened new regions and changed distribution patterns, cranberries entered new markets in increasing volumes. Shipping by rail in refrigerated cars distributed cranberries quickly across the United States, maintaining freshness and opening new markets for cranberries. The advent of trucking then provided the ability to distribute smaller amounts of fresh berries to almost any location.⁷⁶

Difficult economic times, such as the depression of the 1930s, hurt the cranberry industry, but they tended to have a secondary positive effect on productivity by inspiring change and development. War also stimulated cranberry production because canned and dried cranberry products had been popular comfort foods to ship to American soldiers since World War I. Both of these factors combined during the scare. Surpluses were creating difficult economic situations for many cranberry farmers, and the loss of military sales hit the industry hard when the government recalled and restricted the distribution of cranberry products to servicemen in 1959, amounting to approximately 10% of the total annual consumption.⁷⁷

⁷⁵ "Industry to Spend More Promoting Cranberries," Wisconsin Rapids Tribune, Dec. 3, 1959, p.5.

⁷⁶ Jacob Kaufman, *Effect of Precooling on Market Quality of Cranberries Shipped by Rail or Truck*, Marketing Research Report ; (Washington, D.C.: U.S. Dept. of Agriculture, Marketing Research Division, Agricultural Marketing Service, 1958), 1-4.

⁷⁷ "GIs in Far East to Get Cranberries Thursday," Wisconsin Rapids Tribune, Nov. 24, 1959, p.11.

The cultivation of cranberries was a perfect example of the integration of traditional practice and technology over time. A long history of innovation and experimentation in horticulture and technology characterized the cranberry industry. The systematic combination of cranberry culture and technology created a vibrant and productive industry, using lands not suitable for other agriculture. The cranberry industry in 1959 maintained this character and continued the general upward trends of its past. Although the geography of cranberry production remained limited to the areas naturally able to sustain the plant, technology and research improved productivity far beyond natural levels.⁷⁸

According to the USDA, the annual cranberry crop from 1950 through 1959 averaged just over one million 100-pound barrels. The 1950 cranberry season began with a carryover from 1949 of 320,000 barrels (30%), followed by an average carryover of 176,505 barrels through 1956. Large volumes of berries potentially contaminated with aminotriazole were withheld in 1957, 1958, and 1959, which skewed the carryover numbers, but the same growth trends applied. The 1959 season was expected to be the largest on record at an estimated 1,273,000 barrels, with an estimated 400,000 barrels (33%) carried over from 1958.⁷⁹

⁷⁸ Eck, *The American Cranberry*, 56-80.

⁷⁹ United States. Congress. Senate. Agriculture and Forestry Committee., *Cranberry Marketing Orders, Hearing before a Subcommittee Of ..., 85-1 on S. 1680 ..., April 29, 1957*, 46-50.

Table 3: Crop carryover statistics, 1948-1962 (in 100 lb. barrels)

Growing period	Industry carryover	Total production	Avg. percentage carryover
1948-1950 (avg.)	267,333	866,100	31%
1951-1953 (avg.)	67,037	972,366	7%
1954-1956 (avg.)	272,425	1,006,333	26%
1957	150,000 (estimate)	1,050,000	14%
1958	300,000 (estimate)	1,165,600	26%
1959	225,000 (estimate)	1,251,700	18%
1960-1962 (avg.)	200,000	1,300,533	15%

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Based on the raw numbers, the cranberry industry was phenomenally productive and outwardly successful. However, the forced annual carryover resulting from the combination of stagnant demand, increasing production, developing picking and storage technologies, and improved transportation was slowly dragging the industry down (See Table 3). Although the average consumption level kept pace with general population growth, supply was greatly outpacing the highly seasonal demand. In optimum conditions the American cranberry was extremely prolific, and it overwhelmed the ability of the industry to fully dispose of its own product.⁸¹ Although the price per barrel rose from \$5.76 per barrel in 1949 to \$11.60 in 1958 and the crop was still potentially lucrative, the difficulty of disposing of the product was making cranberry growing risky. Annual carryovers forced the industry to maintain warehouses of frozen or refrigerated

⁸⁰ United States. Dept. of Agriculture., *Agricultural Statistics*, 1956, 169; *ibid.*, 1966, 236; United States. Crop Reporting Board, *Fruits--Noncitrus: By States, 1954-59; Revised Estimates, United States, 1949-59: Production, Use, and Value*, (Washington, D.C.: U.S. Dept. of Agriculture, 1961); United States Crop Reporting Board, *Fruits, Non-Citrus, by States, 1959-64: Production, Use, Value* (Washington, D.C.: U.S. Dept. of Agriculture, Statistical Reporting Service, Crop Reporting Board, 1967).

⁸¹ United States. Congress. Senate. Agriculture and Forestry Committee., *Cranberry Marketing Orders, Hearing before a Subcommittee Of ..., 85-1 on S. 1680 ..., April 29, 1957*, 45-46.

berries from the previous year while harvesting a new year's crop, wasting capital and berries to spoilage. The situation in the fall of 1959 was already looking dire, requiring extraordinary efforts or extraordinary events to save the industry from collapse.⁸²

⁸² Untitled, Ocean Spray letter to membership, September 18, 1953 (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin), 1-3.

CHAPTER III
UNITED STATES FOOD LEGISLATION AND THE SCIENCE
OF CHEMICAL TESTING

The history of food legislation and growing concerns over adulterants and carcinogens in food laid the groundwork for the cranberry scare. This chapter explores the development of American food law and the growth of the science of chemical testing, both of which played critical roles in the development and immediate circumstances of the scare.

For most of history, the primary concern in society was simply acquiring enough nutrition and calories to survive and compete. Pre-industrial societies tended to revolve around the acquisition and distribution of food to their members. As western society developed and modernized, the search for food moved from a subsistence activity to a specialized occupation. Farmers and the many people who provided foods, both processed and raw, became iconic members of society that often marginalized them as quaint and rural yet ultimately indispensable.⁸³

Modern American society has generally moved beyond the perception of food as a basic biological need, preferring to eat for enjoyment as well as survival. Events such as food scares that interrupt that desire for abundant, healthy foods have generated strong reactions in both industry and the public.⁸⁴

⁸³ William Alex McIntosh, *Sociologies of Food and Nutrition*, Environment, Development, and Public Policy. Public Policy and Social Services (New York: Plenum Press, 1996), 23-6.

⁸⁴ Richard Osborn Cummings, *The American and His Food; a History of Food Habits in the United States*, (Chicago, IL: The University of Chicago Press, 1941), 122-37.

The nature and quality of food have remained an important element of our perception of food despite the movement away from consumption of only fresh foods. Records from as early as the third century B.C. showed concerns over artificial additives and food fraud. Modern American society has developed an almost obsessive concern with the purity and quality of its food, and the cranberry scare reflected that concern.⁸⁵

Foods themselves, whether raw or prepared, have often developed into socially constructed elements of a society, and became important elements of cultural identity. Cranberries were just such an American food icon, closely associated with holiday feasting. Thanksgiving and Christmas became the primary periods for the consumption of cranberries.⁸⁶

The pivotal organizations involved in monitoring the quality of cranberries in 1959 were the Food and Drug Administration (FDA), the U.S. Department of Agriculture, and the cranberry industry itself. The cranberry industry worked in close association with state and federal organizations. Most bogs were in naturally occurring wetland regions, and cranberry growers were had to carefully heed state and federal laws governing wetlands, wildlife, and water protection. Twentieth-century movements to protect wetlands, wildlife and water quality have seriously curtailed the use of natural bog lands for cranberry production.⁸⁷

⁸⁵ Harvey A. Levenstein, *Revolution at the Table: The Transformation of the American Diet*, California Studies in Food and Culture (Berkeley, CA: University of California Press, 2003), 72.

⁸⁶ Eck, *The American Cranberry*, 1-5.

⁸⁷ Harker et al., *Cranberry Agriculture in Maine : A Grower's Guide*, Chapter 7. Environmental Regulations and Permits, 1-12.

The cranberry scare was a consequence of elements of the Federal Food, Drugs and Cosmetics Act of 1938 and its amendments. The scare was the first major test of the 1958 Delaney Clause and the FDA's interpretation of the statute. The scare was also the first time the FDA used the Delaney clause to publicly ban a potentially harmful chemical because of residues in food.⁸⁸

Early food concerns and legislation

The history of food legislation in the United States can begin in colonial times, with deep roots in British common law. A long series of acts and developments demonstrated consistent concern and progress toward the assurance of a clean and safe food supply. Government has always played a central role in protecting the food supply through legislation and the courts.⁸⁹

The US food industry, guided by state and federal laws, has a long history of testing, questioning the safety of new production methodologies, and regulatory concerns. Concern over food quality and purity had a strong presence in American law from colonial days. A series of state legislation and programs marked the progression toward a national policy on food and its regulation. Massachusetts passed the first significant law in the United States prohibiting adulteration of food in Massachusetts in 1785. "An Act Against Selling Unwholesome Provisions" prohibited the selling of

⁸⁸ Adam J. Lieberman, Simona C. Kwon, and American Council on Science and Health, *Facts Versus Fears: A Review of the Greatest Unfounded Health Scares of Recent Times*, 3rd ed. (New York: American Council on Science and Health, 1998), 1-3.

⁸⁹ Janssen and United States. Food and Drug Administration., *The U.S. Food and Drug Law : How It Came, How It Works*, 1-3.

contaminated, diseased, or otherwise unwholesome food. It included punishments in the form of fines, imprisonment, and public humiliation.⁹⁰

By 1900, almost every state had enacted laws similar to the Massachusetts statute, including meat, dairy and general food protections. The California Pure Food Act of 1850, the direct result of rapid population growth during the gold rush, and the Indiana Pure Food and Drug Law of 1899 are good examples of pre-1906 laws. Such laws sought to curtail misbranding of products and to regulate the manufacture of packaged goods sold within the state and goods transported into the state.⁹¹

Most state legislation did a good job of protecting inhabitants from threats within the state. They commonly regulated raw agricultural products such as milk and eggs, which were particularly prone to contamination and adulteration. The primary shortcoming with local legislation was in dealing with products imported from other states, outside of their jurisdiction. Manufacturers also found it difficult to meet all of the varying state requirements.⁹²

An almost endless parade of claims and counterclaims for new products and chemicals occurred throughout American history. Books and articles condemning or supporting them followed new product innovations and potentially harmful chemical additions. Frederick Accum's 1820 work, *A Treatise on Adulterations of Food and Culinary Poisons*, not only exposed a list of "fraudulent sophistications," but also

⁹⁰ *Ibid.*, 1.

⁹¹ Bennett, Pamela J., ed., "Progress in Public Health," *The Indiana Historian*, (March 1998), 3-14.

⁹² C. C. Regier, "The Struggle for Federal Food and Drugs Legislation," *Law and Contemporary Problems* 1, no. 1 (1933), 5-6.

provided readers with means to detect them.⁹³ The 1820 publication of the *United States Pharmacopea* by a convention of medical professionals from around the United States provided doctors and lawmakers with reliable systems of standards, quality control, and formulation for a variety of drugs. Existence of the Pharmacopea revolutionized standardization of drugs and food additives in the United States and paved the way for broader federal legislation.⁹⁴

Early federal legislative efforts focused on specific products that needed protections because of their higher economic value or potentially harmful character. The 1848 Drug Importation Act sought to stop the importation of adulterated drugs, especially formulations that conflicted with the US Pharmacopea. The 1897 Tea Importation Act regulated the quality of imported teas and placed inspection at the expense of the importer. The 1897 Bottled in Bond Act required a minimum of four years of federally inspected warehousing before bottling and shipping whiskey to retailers. Although it did not guarantee high quality, it did ensure that the product was actually distilled whiskey.⁹⁵

Progress toward the 1906 Food and Drug Act

By 1906 the American public had learned to be suspicious of processed foods and wary of mislabeled foods and medicines. Lethal chemicals and medicines, such as

⁹³ Janssen and United States. Food and Drug Administration., *The U.S. Food and Drug Law : How It Came, How It Works*, 6.

⁹⁴ David Farquhar Cavers, "Law and Contemporary Problems," (Durham, NC: Duke University School of Law, 1939), Vol 6, No 1(Winter 1939), The Food Drug and Cosmetic Act of 38: Its legislative History and its Substantive Provisions, 31-34.

⁹⁵ Hickmann, *The Food and Drug Administration (FDA)*, 26-28.

intentionally adulterated “snake oils” and unintentionally contaminated medicines, as well as consistent problems with the quality of packed and processed foods, indicated the need for serious action. Processing and manufacturing industries continuously sought ways to make cheaper products in greater volume while increasing profits. As a result, more and more chemicals entered the food supply.⁹⁶

Several legislative and industrial leaders paved the way for development of a comprehensive federal law designed to protect the consumer from adulterated foods. Dr. Edward Robinson Squibb (1819-1900), a leading pharmaceutical manufacturer, inventor and physician, proposed a national food and drug law in 1879. Squibb’s bill and a similar attempt in 1892 by Populist political groups failed to gather enough interest in Congress or to arouse the public consciousness.⁹⁷

The most important figure in shaping modern food law was Dr. Harvey W. Wiley (1844-1930), the father of American food and drug law. In addition to being a medical doctor, he was an experienced researcher, a professor of chemistry at Purdue University, and the state chemist for Indiana. Wiley became the Chief Chemist of the US Department of Agriculture in 1883, a position he held through 1912, and was the main proponent of the development of comprehensive food legislation. Wiley’s efforts in the science of testing for chemical effects paved the way for legislators and analysts alike. He pioneered adulteration studies in a wide range of areas, including human testing and named his controversial group of young male volunteers, who consumed various

⁹⁶ Sandra A. Hoffmann and Michael R. Taylor, *Toward Safer Food: Perspectives on Risk and Priority Setting* (Washington, D.C.: Resources for the Future, 2005), 3-20.

⁹⁷ Harvey Washington Wiley, *The History of a Crime against the Food Law, Getting and Spending*. (New York: Arno Press, 1976), 47.

amounts of test substances to determine their effects on human systems, “the poison squad”.⁹⁸ He produced two editions of *Foods and their Adulteration* (1907 and 1912), to update the public on new “sophistications” that they should avoid in their food.⁹⁹

Proponents of the 1906 Food and Drug Act called it the Wiley Act in honor of Wiley’s contributions.

Opposition to the proposed 1906 Food and Drug Act took several forms.

Industrial and corporate resistance, including resistance from patent medicine advertisers and food manufacturers, was the strongest. Manufacturers claimed they could not do their jobs without preservatives, needing chemicals to produce a profitable product. Patent medicine advertisers knew they would lose much of their business if the law placed limitations upon the contents of their wares. Southern legislators also resisted the efforts to pass the bill, citing state’s rights concerns.¹⁰⁰

Wiley and the 1906 Act received help from a variety of groups, including women’s groups, advertisers, and business organizations. The science and medical fields strongly supported increased restrictions and guidelines to protect the public.¹⁰¹ The deplorable conditions publicized by Upton Sinclair in *The Jungle* (1906) were also great inspiration, if not one of the strongest factors in the bill’s passage. Sinclair’s

⁹⁸ Philip J. Hilts, *Protecting America's Health: The Fda, Business, and One Hundred Years of Regulation*, 1st ed. (New York: Alfred A. Knopf, 2003), 39-42.

⁹⁹ Harvey Washington Wiley, *Foods and Their Adulteration; Origin, Manufacture, and Composition of Food Products; Description of Common Adulterations, Food Standards, and National Food Laws and Regulations* (Philadelphia, PA: P. Blakiston's Son & Co., 1907); Harvey Washington Wiley, *Foods and Their Adulteration; Origin, Manufacture, and Composition of Food Products; Infants' and Invalids' Foods; Detection of Common Adulterations, and Food Standards*, (Philadelphia, PA: P. Blakiston's son & co., 1912).

¹⁰⁰ Gustavus Adolphus Weber, *The Food, Drug, and Insecticide Administration; Its History, Activities and Organization* (New York: AMS Press, 1974), 25-30.

¹⁰¹ Regier, "The Struggle for Federal Food and Drugs Legislation," 8-11.

fictionalized narrative dramatized so many public safety and health concerns that Congress had no choice but to respond to the public outrage.¹⁰² President Roosevelt received an advance copy of the work and was disturbed enough to send his own investigators to Chicago to confirm Sinclair's story. Roosevelt coined the term "muckrakers" in referring to such crusading reformers.¹⁰³ The works of other prominent muckrakers, such as journalist, philosopher and author Lincoln Steffens, also had strong impacts on political and social attitudes. In the end, the interests of the consumer were considered paramount in Congress and an almost unanimous Congressional vote vindicated Wiley's efforts.¹⁰⁴

The Pure Food and Drugs Act of 1906 was signed into law by President Theodore Roosevelt on June 30, 1906, with the goals of "preventing the manufacture, sale, or transportation of adulterated or misbranded or poisonous or deleterious foods, drugs, medicines, and liquors, and for regulating traffic therein, and for other purposes." The simultaneous passage of the 1906 Meat Inspection Act was also a product of the work of men and women like Wiley and the muckrakers.¹⁰⁵

The 1906 hearings before the Committee on Interstate and Foreign Commerce used cranberries as an example of why statutory restriction of chemicals and preservatives in food was meaningless without limits and levels. Benzoic acid, often used as a chemical preservative, degrades to poisonous hippuric acid in the body, which

¹⁰² Upton Sinclair, *The Jungle*, (London: Heinemann, 1906).

¹⁰³ Donna J. Wood, "The Strategic Use of Public Policy: Business Support for the 1906 Food and Drug Act," *The Business History Review* 59, no. 3 (1985), 403-08.

¹⁰⁴ Janssen and United States. Food and Drug Administration., *The U.S. Food and Drug Law : How It Came, How It Works*, 2.

¹⁰⁵ Cavers and Law., "Law and Contemporary Problems," 3-7.

is excreted by the liver and acts as an antibacterial in the urine. Cranberries are one of the most abundant naturally occurring sources of benzoic acid, with levels often exceeding that of the most tainted processed foods.¹⁰⁶ Wiley contended that substances creating poisons in the body's processes were useful as means of stimulating action of the liver and kidneys to excrete them. However, he proposed that industrial use of much larger quantities of benzoic acid, or other similar preservatives, would overwhelm the body's ability to deal with the poison effectively, causing cancers and other health problems.¹⁰⁷

The 1906 Food and Drugs Act restricted interstate transport and manufacturing of adulterated and misbranded goods. The Bureau of Chemistry had responsibility to assess products. The Department of Agriculture then decided whether the offense justified legal action. That police responsibility shifted to the Food, Drug, and Insecticide Administration after its formal creation in 1927. The organization was formally renamed the Food and Drug Administration in 1930.¹⁰⁸ The bill also legislated proper labeling of products, and it mandated prescriptions for certain drugs considered too hazardous for unrestricted public use. The 1906 act also permanently incorporated the *US Pharmacopeia* as the basis for its definition and regulation of pharmaceutical compounds.¹⁰⁹

The 1906 act was a relatively simple law for an increasingly complex problem. It was weak in regulatory and punishment capabilities and tended to force government

¹⁰⁶ White and University., "Chemistry and Controversy: Regulating the Use of Chemicals in Foods, 1883-1959", 25.

¹⁰⁷ Wiley, *The History of a Crime against the Food Law*, 25.

¹⁰⁸ Weber, *The Food, Drug, and Insecticide Administration; Its History, Activities and Organization*, 33-35.

¹⁰⁹ Hickmann, *The Food and Drug Administration (FDA)*, 1-11, 21.

entities to react to problems after they had been reported, rather than allowing preventive action. It placed the burden of proof that a product was intentionally fraudulent on the government. The 1906 act did not include provisions for food standards, without which the FDA could not legally prove misbranding of a suspected product. Although food standards and regulatory structures were part of Wiley's original concept, they did not make it into the final version as a result of legislative bargaining with industries, undermining the authority of the statute. The difficulty in effectively protecting the public and the continued growth of chemical additives in food required a much more robust law.¹¹⁰

Wiley and supporters of food law reform considered revision of the 1906 statute essential almost from the moment of its passing. Resistance to revising the law, as well as continued support, came from the same quarters as in 1906. Industry resisted most efforts to change the law fearing increased regulation would damage their business. Public lobbying groups rallied around changes to better protect the public from avoidable harm.¹¹¹

Despite the general resistance of industry to the law based on fear of losing business, many manufacturers made productive use of its specifics and found new sources of success. Promotional themes advertising compliance with the law, such as the Royal Baking Powder Company's aggressive promotion of its cream of tartar baking powder which contained no alum or soda fillers, boosted sales and forced competitors to

¹¹⁰ White and University., "Chemistry and Controversy: Regulating the Use of Chemicals in Foods, 1883-1959", 33.

¹¹¹ Hickmann, *The Food and Drug Administration (FDA)*, 17-28.

upgrade their operations or perish. Industry leaders, such as Pittsburgh vegetable packer H. J. Heinz and Milwaukee brewer Frederick Pabst, who could advertise that they were in compliance with a law designed to protect the public's welfare, had a positive competitive edge.¹¹²

The 1929 publication of Wiley's experience with the 1906 law was another element in generating further interest for revision. Setting his narrative in the form of a criminal case, Wiley presented numerous examples of indifference and ignorance toward the health of the nation by industry and government. He cited a long list of compromises that undermined the purpose of the 1906 law, as well as internal disagreements over the central principles of the legislation.¹¹³

Bills designed to replace the 1906 statute were proposed and rejected throughout the 1920s and 1930s. Between 1912 and 1930, the Food and Drugs Act was amended five times to improve or add definitions to the original text. The 1912 Sherley Amendment, named after Representative Joseph Swagar Sherley (D-KY) for his efforts in getting it passed, was proposed in response to a Supreme Court ruling that left the responsibility for proof of intentional mislabeling with government. It included drugs labeled with fraudulent therapeutic claims among the prohibited misbranded items. The 1913 Gould Amendment, sponsored by Representative Samuel W. Gould (D-ME), also known as the "net-weight" amendment, required that weight, unit of measure, or numerical count be plainly marked on the outside of packages. The 1930 McNary-Mapes

¹¹² White and University., "Chemistry and Controversy: Regulating the Use of Chemicals in Foods, 1883-1959", 20, 28-29.

¹¹³ Wiley, *The History of a Crime against the Food Law*, 18.

amendment, called the “Canner’s Bill,” authorized FDA standards for quality and “fill-of-container” for canned foods. Two other amendments further defined prescription drugs (1914) and formally created the independent Food, Drug, and Insecticide Administration (1927).¹¹⁴

Successive amendments and failed attempts to prevent dangerous chemicals from entering the food supply made it clear to Congress there was a need for preventive legislation. The government needed to shift responsibility to the industries and to impose regulations before products ever reached the public. Well-funded industries had an advantage because the FDA lacked the time, manpower and funding to litigate every case. It took 32 more years of experimentation and litigation before the issue reached a new turning point. The Federal Food, Drug, and Cosmetics Act of 1938, also referred to as the Tugwell Bill after its chief proponent, Rexford Tugwell, was designed to be just such a preventive measure. Tugwell had been the Undersecretary of Agriculture under Franklin D. Roosevelt from 1934 to 1937 and was one of the major architects of FDR’s New Deal.¹¹⁵

On top of congressional pressure and industry maneuvering, one pivotal event enabled the passage of the 1938 bill. Investigators linked more than 100 fatalities in September and October of 1937, mostly children in southern states, to the patent medicine Elixir of Sulfanilamide. The drug contained a potentially lethal dose of the poisonous solvent diethylene glycol, which dissolved solid sulfanilamide to give a liquid

¹¹⁴ Weber, *The Food, Drug, and Insecticide Administration; Its History, Activities and Organization*, 21-5.

¹¹⁵ Cavers and Law., "Law and Contemporary Problems," 5-7.

solution. Investigation showed that no testing had been done on the product and that even a cursory study would have revealed the lethal nature of the solvent. The tragedy helped the 1938 bill by demonstrating exactly what was wrong with the existing law and providing the focal point for change. Fears of similar events shaped the public's concern during the cranberry scare.¹¹⁶

The 1938 Food, Drugs and Cosmetics Act, signed into law by President Roosevelt on June 25, 1938, greatly expanded the power of the FDA and federal government. The new law extended FDA control to cosmetics and therapeutic devices, authorized factory inspections by FDA officials, and set safe tolerances for unavoidable poisonous substances. Manufacturers now had to prove their products were safe before distribution to the public. The FDA also received the right to place legal injunctions against offenders, in addition to its existing powers of seizure and prosecution.¹¹⁷

Wiley and food law reform supporters proposed amendments to the new food law almost immediately. The 1940s through 1950s was a period of rapid social and industrial development as demonstrated by the technologies and chemicals that required new language and protections. The 1941 and 1945 Insulin and Penicillin amendments required the FDA to test and assure the purity and effectiveness of the drugs before public distribution. Concerns such as radiation began to find their way into the regulations in 1954, when the FDA began inspecting Pacific tuna suspected of irradiation by nuclear testing. The 1954 Miller Pesticides Amendment created

¹¹⁶ *Ibid.*, 20.

¹¹⁷ *Ibid.*, 42.

procedures for setting limits on pesticide residues on raw agricultural products, but it did not contain any language concerning carcinogens. The 1954 amendment was the first of three amendments resulting from the Delaney hearings in 1950-1956 and set the stage for further developments (See Table 4).¹¹⁸

Table 4: Amendments to 1938 Food, Drugs and Cosmetics Act, 1938-1960

Amendment	Date enacted
Miller Amendment	June 24, 1948
Durham-Humphrey Amendment	October 26, 1951
Factory Inspection Amendment	August 7, 1953
Miller Pesticides Amendment	July 22, 1954
Food Additives Amendment (Delaney)	September 6, 1958
Pesticide Chemicals Amendment	June 29, 1960
Color Additives Amendment	July 12, 1960

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The 1958 Food Additives Amendment and the Delaney clause

The amendment that ultimately enabled the cranberry scare was House Resolution 13254, which became the 1958 Food Additives Amendment. It required manufacturers to establish the safety of their products if they contained new food additives. The 1958 amendment also formalized and added to a list of additives considered safe in their intended uses based on the judgment of scientific experts and a

¹¹⁸ Hickmann, *The Food and Drug Administration (FDA)*, 12-13, 29-31.

¹¹⁹ *Ibid.*, 150.

long history of problem-free use. GRAS (Generally Recognized as Safe) substances were exempt from the approval and testing process required for other additives.¹²⁰

The amendment's Delaney clause stated that "no additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal".¹²¹ An attempt to regulate extremely complex social, scientific and political concerns, the clause became one of the most controversial clauses in food regulation history. Its passage resulted from many years of congressional investigation, communication with scientific experts, and negotiation between lawmakers and industry interests.¹²²

The House Select Committee to Investigate the Use of Chemicals in Foods and Cosmetics, formed in 1950 and headed by James Delaney, drafted the initial wording. The committee did the initial research into the current state of knowledge on chemicals and chemical adulteration. From the beginning of the amendment's development, Congressional intent was to bring the current food and drug legislation in tune with modern food science and technology. The Food Additive Amendment of 1958 was the culmination of "extensive and intensive hearings" involving testimony from nationally

¹²⁰ Sanford A. Miller and Food and Drug Law Institute (U.S.), *A Symposium on the Delaney Clause : March 26, 1988, Washington, D.C* (Washington, D.C.: Food and Drug Law Institute, 1988), 21.

¹²¹ *Food and Drugs, U.S. Code* 21 (1938), § 409.

¹²² An Address By Hon. James J. Delaney Before the National Health Federation, October 11, 1958, box 14, folder 6, James Joseph Delaney Papers, 1950-1978 (M.E. Grenadier Department of Special Collections and Archives, University at Albany, New York), 1-13.

renowned scientists and medical professionals about common adulterants in food and their potential effects.¹²³

The stated purpose of the hearings begun in 1950 was to determine the nature, extent, and effect of chemicals, compounds, pesticides, insecticides, and synthetics, as well as any combination of the substances, on the food supply and consumers. The investigation included chemicals introduced as a result of processing and packaging. It also looked at the effects of chemicals on the environment and on animal's exposure to residues.¹²⁴ Although the initial hearings did not find major unaddressed issues in the current law, the FDA used the hearings to promote an amendment to provide more freedom to apply scientific judgment to its regulatory activities. Although the FDA was interested in an amendment concerning additives and residues to better protect the public, Congressional and industry resistance to more restrictive legislation prevented passage at that time.¹²⁵

The Subcommittee on Health and Science of the House Committee on Interstate and Foreign Commerce held new hearings on chemicals in food from 1954 through 1956. By 1954, Delaney was convinced of the need to protect the public against potential carcinogens in food. After the second series of hearings ending in 1956, Delaney passed the committee's recommendation to Congress that it amend the 1938

¹²³ Blank, "The Delaney Clause: Technical Naïveté and Scientific Advocacy in the Formulation of Public Health Policies," 1088.

¹²⁴ United States. Congress. House. Select Committee to Investigate the Use of Chemicals in Food Products., *Chemicals in Food Products. Hearings before the House Select Committee to Investigate the Use of Chemicals in Food Products, House of Representatives, Eighty-Second Congress, First[-Second] Session* (Washington, D.C.,1951), 1-3.

¹²⁵ Blank, "The Delaney Clause: Technical Naïveté and Scientific Advocacy in the Formulation of Public Health Policies," 1111-16.

Food, Drug and Cosmetics Act to provide safeguards against foods adulterated by chemicals. The House submitted seven competing bills, one drafted by the FDA.¹²⁶

In August 1958, H.R.13254 passed the Senate without specifically mentioning carcinogens. A statement for the President by Secretary Arthur Flemming on the Department of Health Education and Welfare's (HEW) opinion of H.R.13254 does not mention carcinogens. Based on his statement that the proposed legislation "leaves scientific questions to the scientist," Flemming did not expect to include an anti-cancer clause in the final bill.¹²⁷ The text that eventually became the heart of the Delaney clause was actually proposed by the HEW in 1958 in response to Delaney's insistence to include a cancer provision. The HEW text was much less restrictive than Delaney's original proposition; it limited prohibition of carcinogens to those ingested orally.¹²⁸

The clause was originally left out of H.R. 13254 because it prevented the FDA from balancing the risks of a chemical versus its benefits. The Delaney clause was a barrier that deprived the public of the informed expertise of the FDA and its regulatory apparatus. The clause represented the substitution of an inflexible legislative standard for scientific discretion, as well as an impassible barrier to future scientific and technological developments because they might involve the use or study of banned substances. By preventing the incorporation of new discoveries and technologies that

¹²⁶ *Ibid.*, 1088.

¹²⁷ "Proposed Statement for Issuance by the President upon Approval of H.R. 13254", August 29, 1958, Reports to the President on Pending Legislation, box 144, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

¹²⁸ Blank, "The Delaney Clause: Technical Naïveté and Scientific Advocacy in the Formulation of Public Health Policies," 1114.

might improve our understanding of potential carcinogens, its inflexibility became a detriment to the public rather than a benefit.¹²⁹

The Food Additives Amendment had a twofold purpose. First, it guarded public health by requiring the testing of new and unproven food additives by their manufacturers before their use. Second, it promoted innovation in food technology by permitting the use of previously banned additives if they could be scientifically shown to have safe levels of exposure. The intent of the 1958 Food Additives bill was to prevent the inclusion of any illness-causing substance, and it did that without the Delaney clause. Many scientists, especially chemical and medical specialists, opposed the clause because of its scientifically inflexible nature.¹³⁰ The clause was eventually re-inserted as a result of Delaney's tenacity and personal influence in Congress and the willingness of HEW and FDA to compromise to make sure the larger amendment passed. In testimony before the House Subcommittee on Health and Science in 1958 Delaney stated,

“Without going into details, I found it possible to prevent the legislation [H.R.13254] from reaching the floor of the House, and early in August representatives of the Food and Drug Administration met with me to find some way out of the impasse. In conference, we were able to work out and amendment covering carcinogens... Upon adoption of the amendment, I withdrew my opposition to the bill.” The final bill passed the House with the Delaney clause inserted, and it was signed into law in September 1958.¹³¹

Cancer and public health were the two major issues at the center of the Delaney clause. What caused cancer and whether the cancer arose from exposure to particular

¹²⁹ Frederick Coulston et al., *Regulatory Aspects of Carcinogenesis and Food Additives: The Delaney Clause*, Ecotoxicology and Environmental Quality (San Francisco, CA: Academic Press, 1979), 93-100.

¹³⁰ United States. Congress. House. Select Committee to Investigate the Use of Chemicals in Food Products., *Chemicals in Food Products, Hearings Before...*, 81-2 Created Pursuant to H. Res. 323, September 14-December 15, 1950 (1951), 505-10, 644-8.

¹³¹ An Address by Hon. James J. Delaney, October 11, 1958, box 4, folder 6 (M.E. Grenadier Department of Special Collections and Archives, University at Albany, New York), 11.

chemicals were hotly debated topics in both the scientific and legislative communities. Smoking was first linked clearly to lung cancer and heart disease in the 1930s as the first generations of heavy cigarette smokers developed the disease. However, the mechanism causing the cancer in smokers remained unclear.¹³² Clear evidence of the link between cigarette smoking and lung cancer, based on the findings of a joint study of the American Cancer Society, the American Heart Association, the National Cancer Institute, and the National Heart Institute was reported in *Science* in 1957.¹³³ The Surgeon General of the United States first officially warned the American public about the dangers of smoking in 1964. *Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service* summarized national and international research into smoking and its relationship to cancer from the previous sixty years. The conclusion was that a clear relationship existed between smoking and several cancers of the lung and respiratory system.¹³⁴

The House Committee on Interstate and Foreign Commerce identified cancer as the most deadly and misunderstood of the potential health hazards facing the American people.¹³⁵ The Delaney clause sought to protect the public from the unknowns of cancer

¹³² E. Ashley Cooper et al., "The Role of Tobacco-Smoking in the Production of Cancer," *The Journal of Hygiene* 32, no. 2 (1932).

¹³³ Smoking Study Group on and Health, "Smoking and Health," *Science* 125, no. 3258 (1957).

¹³⁴ United States. Department of health education and welfare. Public health service., *Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service* (Washington: Van Nostrand, 1964).

¹³⁵ United States. Congress. House. Committee on Interstate and Foreign Commerce., *Health Inquiry. Hearings before the Committee on Interstate and Foreign Commerce. House of Representatives. 83d Congress. 1st Session, on the Causes, Control and Remedies of the Principal Diseases of Mankind, Oct. 7,8, and 9, 1953* (Washington, D.C.: Govt. Print. Off., 1953), 1-10.

by banning any substance in food that testing could show to cause cancer. Congress chose to err on the side of overprotection to protect public safety.¹³⁶

Just before the second round of Delaney hearings in 1954, hearings before the House Committee on Interstate and Foreign Commerce looked at cancer, one of the “principal diseases of mankind”. The second leading cause of death in the United States, medical researchers described cancer as an “extraordinarily complex disease... with no known definitive cause.” William Donovan, director of the board of the American Cancer Society, stated that “Cancer is still an all-pervading biological problem of baffling complexity,” but also noted that the “centuries old scourge of cancer” appeared to be slowly yielding to scientific research. Each speaker before the committee characterized the fight against cancer as a war, requiring consistent funding, special weapons, and significant sacrifice in funds and manpower.¹³⁷

Although the testimony showed that medical professionals still did not know what caused cancer, there were explanations for the apparent rise in cancer deaths since the turn of the century. More and more people were living past 45, the statistical age at which cancer incidence rose exponentially. The rising number of older Americans required a rising number of doctors to care for them, and as the number of doctors increased, the number of cancer diagnoses went up. Increasingly accurate diagnostic techniques were finding cancers more frequently when they would have gone unnoticed

¹³⁶ Miller and Food and Drug Law Institute (U.S.), *A Symposium on the Delaney Clause : March 26, 1988, Washington, D.C.*, 1-12.

¹³⁷ United States. Congress. House. Committee on Interstate and Foreign Commerce., *Health Inquiry. Hearings before the Committee on Interstate and Foreign Commerce. House of Representatives. 83d Congress. 1st Session, on the Causes, Control and Remedies of the Principal Diseases of Mankind, Oct. 7,8, and 9, 1953*, 225.

in the past. Lastly, a real increase in the rate of cancer because of chemical exposures, unhealthy eating habits, smoking, and sedentary lifestyles was possible.¹³⁸

In 1953, genes, hormones, viruses, radiation, and chemical exposure were the primary suspected causes of cancer. None of the many types of cancer were definitively linked to specific causes nor were they curable without early detection and treatment. Surgery was still the primary form of treatment, with radiation and chemotherapy as experimental alternatives that often had only temporary results.¹³⁹ No known serums, salves, or chemicals were effective against cancer, and individuals could do nothing to protect themselves with certainty. Grim cancer treatment statistics underscored how little scientists could do to battle the disease.¹⁴⁰

Intense efforts at public and professional education concerning cancer, begun in the early 1940s by the American Medical Association and the National Cancer Institute, were still under way in 1959. Programs distributed books, articles, movies, and brochures with the facts about cancer and its prevention. National magazines informed millions of readers of the early warning signs as well as available medical procedures. The central advice throughout the information campaigns was to minimize the delay between detection and treatment.¹⁴¹

The medical and scientific communities had no certain cure, but their attempts to

¹³⁸ Ibid., 142-6.

¹³⁹ Furman, Bess, *New York Times*, "Drugs Called Key to Cancer Fight," p. 22, November 12, 1959.

¹⁴⁰ United States. Congress. House. Committee on Interstate and Foreign Commerce., *Health Inquiry. Hearings before the Committee on Interstate and Foreign Commerce. House of Representatives. 83d Congress. 1st Session, on the Causes, Control and Remedies of the Principal Diseases of Mankind, Oct. 7, 8, and 9, 1953*, 362.

¹⁴¹ Irving I. Kessler, *Cancer Control: Contemporary Views on Screening, Diagnosis, and Therapy, Including a Colloquy on the Delaney Clause* (Baltimore, MD: University Park Press, 1980), 3-4.

explain the situation only confused the public. Doctors acknowledged that anxiety and fear were probable results of confusing and potentially unpleasant information. Doctors did not portray the situation as hopeless, but advising patience and trusting in future developments were of no consolation to those who might suffer in the present. Education programs and publication of accurate diagnostic information were good for the general health of the population because of increased awareness of symptoms and treatment options. Unfortunately, the lack of effective treatment options only underscored the severity of the problem in the public consciousness. Thus, a potentially cancer-causing chemical found in food elicited a strong response, whether the evidence for carcinogenicity was valid or not.¹⁴²

National Cancer Institute testimony during the 1953 hearings provided sobering mortality statistics and posited a very challenging road ahead for cancer research. It suggested the two main reasons for not seeking treatment were ignorance of the signs of cancer and fear. The fear encompassed basic fear of the unknown, fear of the physically traumatic treatments, fear of death, and even generalized fear of the social disgrace in having cancer. All of these forms of fear caused individuals to hide their condition from their family and doctors, endangering their chances of survival.¹⁴³

The Delaney clause was the result of scientific, medical, and social concerns about cancer and an attempt to shield the public from potential causes of the disease.

¹⁴² United States. Congress. House. Committee on Interstate and Foreign Commerce., *Health Inquiry. Hearings before the Committee on Interstate and Foreign Commerce. House of Representatives. 83d Congress. 1st Session, on the Causes, Control and Remedies of the Principal Diseases of Mankind, Oct. 7,8, and 9, 1953*, 379.

¹⁴³ *Ibid.*, 351.

Despite its straightforward language and apparent simplicity, the Delaney amendment was a complex topic and a source of disagreement in both the legislative and scientific realms. Legislators struggled with the topics of cancer, public health, economy, industry productivity, and scientific methodology in designing a way to protect the public from chemical residues.¹⁴⁴ The Food Additives Amendment accommodated industry by providing procedures for setting tolerances for chemical residues and the FDA by providing a regulatory means of protecting the public from carcinogens.¹⁴⁵

The scientific community was divided on how to determine the carcinogenicity of a specific material, as well as on how to set limits on its use.¹⁴⁶ Disagreements over the use of pure and applied research as well as whether to concentrate efforts on prevention or cure were important dividing lines in cancer discussions. Industry, scientific, and legislative interpretations of those analytical processes often differed, and test data were interpreted differently depending upon differing professional points of view.¹⁴⁷ Criticism of the no-tolerance position of the Delaney clause came from scientific and medical professionals involved in chemical toxicity studies and general health issues. In contrast, support for the no-tolerance position came from epidemiologists and cancer specialists dealing directly with the disease and its cure. They recognized that, although a substance that caused cancer in animals will not

¹⁴⁴ Congressional testimony by James Delaney, January 31, 1951, box 14, folder 4, James Joseph Delaney Papers, 1950-1978 (M.E. Grenadier Department of Special Collections and Archives, University at Albany, New York), 1-4.

¹⁴⁵ Blank, "The Delaney Clause: Technical Naïveté and Scientific Advocacy in the Formulation of Public Health Policies," 1094-111.

¹⁴⁶ United States. Congress. House. Committee on Interstate and Foreign Commerce., *Health Inquiry. Hearings before the Committee on Interstate and Foreign Commerce. House of Representatives. 83d Congress. 1st Session, on the Causes, Control and Remedies of the Principal Diseases of Mankind, Oct. 7, 8, and 9, 1953*, 180-2.

¹⁴⁷ Richard A. Merrill and Michael Schewel, "Fda Regulation of Environmental Contaminants of Food," *Virginia Law Review* 66, no. 8 (1980), 10-21.

necessarily do so in humans, an experiment that showed carcinogenicity in any test species cast enough doubt to warrant caution.¹⁴⁸

At the heart of the Delaney debate was the perception of causation and the attempt to legislate an intangible scientific concept. From the simplest perspective, an effect had a single cause, but a scientific perspective viewed causation as far more complex. Thus aminotriazole did not actually cause thyroid cancer directly. Rather the compound suppressed thyroid function long enough for tumors to develop as a result of glandular irritation. The application of large volumes of aminotriazole over time caused inflammation in the organ, while natural growth and cell division during these irritated periods eventually led to mutation and cancer. Scientifically speaking, any effect is the combination of all known contributing factors, not one single cause, and scientific investigation concluded that aminotriazole exposure could lead to cancer under certain circumstances. The Delaney clause, which does not allow for scientific nuances, stated that the possibility of cancer as a result of exposure equated to causation. The Delaney clause sought to avoid scientific uncertainty surrounding cancer causation and simplify prevention efforts by removing one of the potential factors, carcinogenic chemicals, from the equation.¹⁴⁹

The Department of Health, Education, and Welfare, the parent department of the FDA in 1959, was responsible for interpreting and enforcing the Delaney clause as well as assessing all available scientific research bearing on FDA activities. Because the law

¹⁴⁸ Kessler, *Cancer Control: Contemporary Views on Screening, Diagnosis, and Therapy, Including a Colloquy on the Delaney Clause*, 258.

¹⁴⁹ Blank, "The Delaney Clause: Technical Naïveté and Scientific Advocacy in the Formulation of Public Health Policies," 1097.

allowed no tolerances for carcinogens in food, any evidence of carcinogenesis required an automatic ban to protect the public.¹⁵⁰ During the cranberry scare, the chemical and cranberry industries took the perspective of most analytical scientists, citing little substantive danger to the public.¹⁵¹

The FDA normally had the authority to set limits on levels of contamination by any potentially harmful chemical, but the Delaney clause eliminated any discretion in dealing with known or suspected carcinogens, generating an inconsistent procedural conflict.¹⁵² Chemical manufacturers were allowed to apply for tolerances or waivers for their products if they might end up in food and they did not cause cancer. Chemical industry representatives applied for such tolerance rulings on aminotriazole twice before the events in 1959, but the FDA refused attempts pending animal testing results.¹⁵³

Science and the development of chemical testing

The science of food testing and analysis had close ties to the development of both protective legislation and the chemical industry. The need for methods to determine the toxicity or nutritive value of any given substance became a critical factor in the

¹⁵⁰ Rufus E. Miles, *The Department of Health, Education, and Welfare*, The Praeger Library of U.S. Government Departments and Agencies, (New York: Praeger, 1974), 37.

¹⁵¹ "Then The Tornado", Ocean Spray newsletter Vol. 2, No. 12, December 21, 1959 (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin), 4-8.

¹⁵² Blank, "The Delaney Clause: Technical Naïveté and Scientific Advocacy in the Formulation of Public Health Policies," 1093.

¹⁵³ Report Presented by Secretary of Health, Education, and Welfare Arthur S. Flemming to the Committee on Interstate and Foreign Commerce of the House of Representatives, January 26, 1960, General Correspondence, Cranberry Flap, box 187, Pre-Presidential papers of Richard M. Nixon, NARA Pacific Region (Laguna Niguel, California), 9-10.

development of food legislation as chemical additives became increasingly prevalent in the food supply.¹⁵⁴

The development of the first artificial chemical dyes and preservatives in the mid 1800s began a process of development that laid the groundwork for a proliferation of industrial chemicals through the present. Scientists had to develop a test to determine the presence of each new chemical, its concentration, and its effectiveness in order to properly evaluate its function. As the need for testing and evaluation became more common, systematic procedures were established to maintain scientific standards. When tests designed to detect specific chemicals were applied to biological processes, they allowed scientists to track both residues of the target chemical and breakdown byproducts. New more sensitive tests allowed for better analysis, which in turn allowed for new chemical interactions to be tested, and so forth. This system of analysis and reaction was a central part of FDA methodology during the cranberry scare.¹⁵⁵

The science of nutrition first developed in Germany in the 1840s following the pioneering studies of Justus von Liebig (1803-1873) in organic chemistry and his development understanding of the chemical processes of plant and animal nutrition. Liebig was known as an entrepreneur and teacher, as well as an innovator.¹⁵⁶ Research into the relationship of food intake and general health took root in America in 1890 with Wilbur Atwater, a reform-minded chemist from Wesleyan University. Atwater was one

¹⁵⁴ Weber, *The Food, Drug, and Insecticide Administration; Its History, Activities and Organization*, 1-35.

¹⁵⁵ Emily Monosson, "Chemical Mixtures: Considering the Evolution of Toxicology and Chemical Assessment," *Environmental Health Perspectives* 113, no. 4 (2005), 383-84.

¹⁵⁶ Petra Werner and Frederic L. Holmes, "Justus Liebig and the Plant Physiologists," *Journal of the History of Biology* 35, no. 3 (2002), 421-30.

of the first to criticize the eating habits of Americans and to suggest a link between poor health and food consumption.¹⁵⁷ Although the pace of development and introduction of new chemicals into the food supply increased steadily, the development of testing procedures was haphazard until World War II. During and after World War II, agricultural and manufacturing technologies increased the number of chemicals in use as well as their quantities. This increase in chemical consumption guided the development of new understanding of the interactions of those chemicals in both plant and animal systems.¹⁵⁸

Social perceptions of science and food strongly influenced the public's response to the cranberry scare. The progressive development of technologies and chemicals since the turn of the century seemed to be ushering in an age of prosperity and plenty. The growing use and development of new and increasingly effective machines and substances increased industrial and agricultural efficiency and productivity. In turn, those developments and products found their way into the daily lives of the public. Americans in the 1950s were bombarded with advertisements for and incentives to use a wide spectrum of new technologies, such as television and automatic appliances designed to encourage integration of those technologies into the home.¹⁵⁹

At the same time, the public was becoming increasingly aware of the potential dangers of the chemicals in their food. People had already learned to be concerned about

¹⁵⁷ Stacey, *Consumed: Why Americans Love, Hate, and Fear Food*, 28.

¹⁵⁸ John W. Finley et al., *Food Safety Assessment*, Acs Symposium Series, (Washington, D.C.: American Chemical Society, 1992), 8-25.

¹⁵⁹ Carolyn Marvin, *When Old Technologies Were New: Thinking About Electric Communication in the Late Nineteenth Century* (New York: Oxford University Press, 1988), 1-8.

their food through radio, television, and printed sources. Accompanying the increasing number of food technologies through the 1940s and 1950s was a large increase in the number and types of highly processed “junk foods” entering the market, such as fried potato and corn chips, high-calorie candy bars, and fast food. Despite the extension of the average life expectancy because of medical advances, a simultaneous increase in the incidence of several illnesses occurred, creating concerns for the nation’s long-term health.¹⁶⁰ People were living longer, but an increasing number were living unhealthy lives. The effect was most noticeable in a significant increase in death rates from heart disease between the 1930s and 1950s.¹⁶¹

As evidence of the negative impacts of chemical consumption on health grew, including obesity, heart disease, and gastro-intestinal problems, efforts to educate the public also increased. Medical, chemical and pharmaceutical professionals acted as voices of caution concerning chemicals in food, but maintained that science and government were capable of handling the problems. Programs and policies to inform and shape the eating habits of Americans began in the 1930s and increased after World War II. The National Cancer Institute, created by the 1937 National Cancer Act, and the privately funded American Cancer Society (1915) offered public and professional training programs to provide current information and reduce ignorance and fear concerning cancer. Programs designed by the American Medical Association, the

¹⁶⁰ Elizabeth M. Whelan, *Toxic Terror: The Truth Behind the Cancer Scares* (Buffalo, N.Y.: Prometheus Books, 1993), 253-75.

¹⁶¹ United States. Congress. House. Committee on Interstate and Foreign Commerce., *Health Inquiry. Hearings before the Committee on Interstate and Foreign Commerce. House of Representatives. 83d Congress. 1st Session, on the Causes, Control and Remedies of the Principal Diseases of Mankind, Oct. 7, 8, and 9, 1953*, 51-60.

American Heart Association, and the American Public Health Association set the standards for public understanding of cancer and the effects of chemicals in food.¹⁶²

The science of food analysis focused in part on the effects of additives, colorants and chemical residues on animal and plant biological systems. Such studies sought to understand the effects of chemicals on the human system through inference and comparison. Products and chemicals specifically intended for human consumption had to undergo human trials, but they were typically tested on animals first because of ethical concerns. After passage of the 1938 Food and Drug Act, fertilizers, insecticides, and herbicides not intended for human consumption, such as aminotriazole, never reached the human testing phase. Their toxicity data was determined from animal testing and any available incidental exposure data reported by chemical users.¹⁶³

Some early chemical testing efforts, such as Wiley's poison squad in 1912, briefly reversed the modern trend toward animal testing. Wiley chose chemicals that were unavoidably part of human consumption and gave them to humans at various levels and concentrations to determine any ill effects. Wiley's reports only noted short-term harmful effects or positive benefits. Subtle or long-term effects, such as carcinogenesis, were very difficult to track and associate with a given chemical.¹⁶⁴

Extrapolating a toxic effect in humans based on an observed toxic effect in rodents or other test animals has been common since the nineteenth century and was a central element in the scientific furor over the cranberry scare. Animal testing,

¹⁶² Ibid., 224-40.

¹⁶³ Finley et al., *Food Safety Assessment*, 48-58.

¹⁶⁴ Lorine Swainston Goodwin, *The Pure Food, Drink, and Drug Crusaders, 1879-1914* (Jefferson, NC: McFarland, 1999), 219-23.

specifically on rats and mice with relatively short life spans, offers the opportunity to test a chemical through a complete lifespan. A thorough examination, both physically and chemically, allowed estimation of any positive or negative effects from long-term exposure.¹⁶⁵

The classification of additives and residues must make distinctions between directly and indirectly toxic substances. Some chemicals harm an animal or plant by directly affecting a biological system. Other chemicals caused toxic effects indirectly through the suppression or acceleration of biological activities, or through chemical breakdown products. Chemical analysis of the effect of any given substance must look at both the direct effects of a chemical at various concentrations and the effects of any chemicals resulting from the breakdown or digestion of the source chemical.¹⁶⁶

During the cranberry scare, some scientific experts repeatedly said that aminotriazole had shown no toxicity in humans, and that the levels causing acute toxicity in mice were equivalent to an impossible exposure level in humans.¹⁶⁷ Dr. Edwin B. Astwood, one of the FDA scientists who conducted the tests to determine the carcinogenicity of aminotriazole in 1957-1958, testified before Congress about the harmlessness of aminotriazole in humans, as did Dr. Boyd Shaffer of the American Cyanamid testing team, the primary manufacturer of aminotriazole.¹⁶⁸ Several other

¹⁶⁵ Mary Weideman, "Toxicity Tests in Animals: Historical Perspectives and New Opportunities," *Environmental Health Perspectives* 101, no. 3 (1993), 222-25.

¹⁶⁶ Fatimah Linda Collier Jackson, "Secondary Compounds in Plants (Allelochemicals) as Promoters of Human Biological Variability," *Annual Review of Anthropology* 20(1991), 505-14.

¹⁶⁷ "Cranberry Threat—If You Eat 7 ½ Tons," *San Francisco Chronicle*, Nov. 12, 1959, p.1.

¹⁶⁸ Untitled memorandum, January 31, 1959, Don Paarlberg Files, box 5, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas) and *San Francisco Chronicle*, "Cranberry Threat—If You Eat 7 ½ Tons," November 12, 1959, 14.

professionals, including Ocean Spray President Ambrose Stevens and Dr. Arnold Shallock of the Rutgers Agricultural Experiment Station, said they had no concerns over aminotriazole's toxicity in humans.¹⁶⁹ Nonetheless, the FDA and Secretary Flemming maintained that no one could know how much of a carcinogen was too much and that the law did not give them the latitude to speculate. Any given exposure might lead to cancer, and how low that exposure might be was unknown, so any exposure level was banned.¹⁷⁰

Both the FDA and American Cyanamid conducted tests on mice between 1957 and 1959 to determine the effects of aminotriazole. The FDA tests provided clear evidence that aminotriazole was both a strong thyroid suppressant and a carcinogen in mice. The FDA communicated this to American Cyanamid and suggested their scientists focus their attention to those areas to confirm FDA findings.¹⁷¹

The American Cyanamid performed its tests in three phases during 1958-1959 in preparation to request a residue tolerance from the FDA. In acute toxicity studies, rats were fed large doses of aminotriazole to determine a lethal dose, which was found to be 25 grams of aminotriazole per kilogram of body weight. Sub-acute toxicity studies, run parallel to the acute studies, involved feeding rats 50, 250, and 1,250 parts per million (ppm) of aminotriazole in drinking water for 160 days. All three concentrations increased thyroid size.¹⁷²

American Cyanamid also conducted long-term feeding studies on rats and dogs. Rats were fed 10, 50, and 100 ppm in their drinking water for two years. More than half

¹⁶⁹ "Great Minds Split Over Cranberries," San Francisco Chronicle, Nov. 11, 1959, p.1.

¹⁷⁰ Statement by Arthur S. Flemming, November 9, 1959 (Abilene, Kansas), 3.

¹⁷¹ Report, January 26, 1960 (Laguna Niguel, California), 7.

¹⁷² Ibid, 5.

of the subjects fed at 100 ppm had tumors by the end of the study, and tumors appeared less frequently at concentrations of 10 and 50 ppm. Similar studies on dogs ended after one year with no noticeable effect on their thyroid and no tumors, indicating that the chemical affected different species differently.¹⁷³ Aminotriazole testing done with canines showed no thyroid suppression or tumors, and demonstrated that toxic dosages can vary widely by species and body mass.¹⁷⁴

Testing for contamination in a sample was a very different procedure from toxicity testing in live subjects. Testing for the presence of a chemical in a sample could be complex, depending on the nature of the sample, the concentration of the target chemical, and the sensitivity of the test method. Improvements in testing quality and sensitivity affected the results, and made it possible to use less of a chemical to better effect.¹⁷⁵

The FDA adapted early tests for aminotriazole to test for aminotriazole concentration in cranberries. The FDA used its new tests in late 1957 when reports indicated part of that year's cranberry crop was probably contaminated. The sample solution then went through a complex series of dilutions, evaporations, and absorptions involving several other compounds including hydrogen peroxide, ammonium hydroxide, hydrochloric acid, and chromotropic acid. The concentration of aminotriazole was measured spectrophotometrically by comparing the result to a standard color curve. The

¹⁷³ Ibid, 6.

¹⁷⁴ LaFollette, H., N. Shanks, "Animal Experimentation: The Legacy of Claude Bernard," *International Studies in the Philosophy of Science* (1994), 195-210.

¹⁷⁵ U. S. Department of Health, Education, and Welfare Press Release, December 15, 1959, General Correspondence, Cranberry Flap, box 187, Pre-Presidential papers of Richard M. Nixon, NARA Pacific Region (Laguna Niguel, California), 1-2.

method used in November 1959 had a low-end detection range of 0.05 ppm, a level at which even berries that had never been exposed to any herbicide could register false positive readings.¹⁷⁶

The FDA defined “tolerance” as the lowest safe level of a chemical, based on extensive toxicity test data. The alternative to a tolerance level, proposed during the 1951 and 1954 Delaney Hearings and discussed during the scare, was the “de minimis” principle. “De minimis,” which was derived from the Latin term *de minimis non curat lex* or “the law does not regard trifles,” refers to the point at which a residue, although detectable, can be ignored as harmless.¹⁷⁷ The cranberry industry maintained that aminotriazole should be treated in this fashion, but the concept was directly contrary to the Delaney clause, and the FDA had no legal alternative but to treat aminotriazole contamination as a no-tolerance situation.¹⁷⁸

As the science of chemical analysis progressed, detection of smaller and smaller traces of individual chemicals became possible. For chemicals without registered tolerances, this trend meant that residues and contamination were increasingly easy to detect, making the chemical increasingly subject to automatic FDA ban under the

¹⁷⁶ Wisconsin Alumni Research Foundation, Methods for Residues of 3-Amino-1,2,4 triazole in Cranberry Fruit, October 30, 1959 and Wisconsin Alumni Research Foundation, Assay Report, November 9, 1959, Cranberry Collection, Research Materials (Wisconsin State Cranberry Growers Association archives). The WARF, which did aminotriazole testing for Ocean Spray, concluded that the contamination testing methodologies of Ocean Spray and the FDA were slightly different, but produced scientifically comparable results.

¹⁷⁶ HEW Press Release, December 15, 1959. (Laguna Niguel, California), 1-2.

¹⁷⁷ Martin Peterson, "What Is a De Minimis Risk?," *Risk Management* 4, no. 2 (2002), 47-50.

¹⁷⁸ Report, January 26, 1960 (Laguna Niguel, California), 6-10.

Delaney clause. Theoretically, improved testing technologies could lead to an inability to avoid any level of “contamination,” making the concept of tolerances meaningless.¹⁷⁹

The Delaney clause generated administrative problems and scientific controversy because a policy of zero tolerance left no room for scientific judgment. It barred industries from exploring the potential benefits of certain chemicals that might be valuable at low exposure levels, and forced the FDA to react against all zero-tolerance chemicals rather than rely on the expertise of its staff. Not only did a no-tolerance policy undermine the ability of the regulatory agencies to do their jobs effectively, but it also suppressed scientific endeavors that might otherwise generate new and useful technologies.¹⁸⁰

During the 1950s, the FDA had three major challenges in controlling food additives. Immediately harmful adulterants were easily legislated against, and were normally avoided by manufacturers because of the threat of negative publicity and legal action. Naturally toxic substances common in processed foods, such as salt and benzoic acid, were given tolerances or added to the list of Generally Recognized as Safe (GRAS) substances.¹⁸¹ Produce containing carcinogens, such as turnips and rutabagas that naturally contain more aminotriazole-like toxins per kilogram than any degree of contamination found during the scare, were exempt from the Delaney clause.¹⁸² The

¹⁷⁹ Blank, "The Delaney Clause: Technical Naïveté and Scientific Advocacy in the Formulation of Public Health Policies," 1086-88.

¹⁸⁰ Miller and Food and Drug Law Institute (U.S.), *A Symposium on the Delaney Clause : March 26, 1988, Washington, D.C.*, 10-24.

¹⁸¹ Jackson, "Secondary Compounds in Plants (Allelochemicals) as Promoters of Human Biological Variability," 505-21.

¹⁸² Jukes and Shaffer, "Antithyroid Effects of Aminotriazole," 132.

most difficult task was determining the nature and toxicity of long-term chemical threats.¹⁸³

In addition to the acute toxicity of some substances, one of the central scientific issues in the management of potential health problems from food additives was that many caused no immediate harm. Lawmakers were hesitant to legislate against the use of chemicals that might or might not be problematic.¹⁸⁴ Testing to determine any long-term effects of chemicals without known short-term effects has been central theme in chemical residues testing since the turn of the 20th century. Aminotriazole, the potentially carcinogenic herbicide involved in the cranberry scare, was exactly such a chemical. Although tests showed that large scale ingestion in animals over long periods could generate thyroid tumors, incidental exposure and single, high-dose exposure in humans produced no lasting toxicity. Medical communities considered its ability to temporarily suppress thyroid function a marked benefit, and some endocrinologists in 1959 considered it a drug for that purpose.¹⁸⁵

In many ways the cranberry scare was a scientific phenomenon as well as a legislative and social one. Scientists discovered the chemical that was at the center of the scare, as well as the tests for carcinogenicity and residues. Scientists worked directly with legislators and helped set the standards that led to the Delaney clause. Without the close interrelationship of science and legislation in creating the circumstances of the

¹⁸³ Monosson, "Chemical Mixtures: Considering the Evolution of Toxicology and Chemical Assessment," 383-88.

¹⁸⁴ United States. Congress. House. Select Committee to Investigate the Use of Chemicals in Food Products., *Chemicals in Food Products, Hearings Before...*, 81-2 Created Pursuant to H. Res. 323, September 14-December 15, 1950, 501-09, 644-8.

¹⁸⁵ Weideman, "Toxicity Tests in Animals: Historical Perspectives and New Opportunities," 222-25.

scare, the public might never have suspected their cranberries were not pure and wholesome.

The cranberry scare demonstrated the vulnerability of the food industry as well as American society to misinformation, lack of administrative preparation, and shifting public perception of food concerns. It also opened the eyes of both industry and government to issues concerning chemicals in food that had been building over the previous decades, and it showed that reevaluation of procedures would be necessary to deal with future problems.

CHAPTER IV

FEAR, TECHNOLOGY AND THE MEDIA

One housewife whom we know says she dumped her prepared cranberry jellies into the garbage can, then sat down and smoked a cigarette in relief at having just been saved from cancer.¹⁸⁶

Fear, technology, and the media were central themes throughout the cranberry scare. This chapter explores the nature of food fears in society and the technologies that made the scare possible, with a focus on media technologies as the most central means of transmitting information and generating confusion.

A degree of fear has been a constant in human society. The emotion plays a necessary psychological function within human societies, providing focus, direction, and strength. Fears, especially those that provide a common experience or communal gathering point such as fear of epidemic or fear of a common enemy, are positive elements of an overall societal outlook. But when the concerns on both the individual and the societal levels become irrational, uncontrolled, or disruptive, society suffers.¹⁸⁷ In all human societies, abundant, quality food is a necessity for life and happiness. Food and its availability shape every facet of a society's daily existence. An inability to trust the food supply can generate anxiety and erode trust in leadership.¹⁸⁸ The cranberry scare was a good example of how social anxiety and the necessity of food can combine to generate strong social reaction.

¹⁸⁶ "A Nation Without Cranberry Sauce," San Francisco Chronicle, Nov. 11, 1959, p. 40.

¹⁸⁷ Robin, *Fear: The History of a Political Idea*, 1-30.

¹⁸⁸ McIntosh, *Sociologies of Food and Nutrition*, 42-47.

Several fear factors combined in the cranberry scare, including societal anxiety, fear of food contamination, and fear of cancer. One important factor revolved around the relationship between food and politics. The central factors in the quick and efficient spread of the concern over contaminated cranberries were television, radio, and newspapers. The day after the news conference during which Secretary Flemming announced the FDA's concerns, most major newspapers carried front-page stories about cranberries and chemical contamination. Television and radio stories spread the word instantly. Some reported the story as it occurred, and others heightened the fear with commentary and panicked reaction. Confusion and panic were the inevitable results.¹⁸⁹

Societal fear

Change is a primary generator of fear and anxiety in an individual or in society. Change is generally resisted unless circumstances or information make the alteration desired or necessary. Therefore changes in something as important as the food we eat never occur in a social vacuum. Changes in the nature and availability of the food supply, especially basic staples, often have had far reaching effects on society, including population shifts, political revolution, and war. Similarly, changes in the social, industrial, and political structures within a society could affect the food supply. The combination of these effects places food at the very center of society's concerns.¹⁹⁰

¹⁸⁹ Timothy Richard Glander, *Origins of Mass Communications Research During the American Cold War : Educational Effects and Contemporary Implications* (Mahwah, NJ: L. Erlbaum, 2000), 179 -201.

¹⁹⁰ Hoffmann and Taylor, *Toward Safer Food: Perspectives on Risk and Priority Setting*, 3-20, 129-40.

The 1950s in the United States was a period of shifting national personalities. There was a distinct divide between the contemporary perception of the decade as portrayed by the media and the historical reality of the 1950s, especially when compared to the 1960s. The media helped to generate a positive image of the decade as a technologically advanced and domestically utopian period. Much of the revolutionary technology, such as kitchen appliances, was focused on the home, but television and the chemical industries added their own contributions to societal change. This age of plenty and easy living held science and technology as the hopes for both the present and the future. Conservative values were the political and social norm, at least in print.¹⁹¹

In contrast, underlying the apparently placid social climate of the late 1950s was an array of social tensions. The Great Depression, two world wars, and the hardships associated with them had left indelible marks in the minds of the public. Specters of the recent past, the heightening Cold War, smoldering civil rights issues, and an ever-present “threat” of the dissolution of the American way helped to create a general climate of anxiety and fear within the American collective consciousness of 1959. The ever-present threats of the “red menace” and atomic war weighed heavily.¹⁹²

Some of the social tension was apparent in contemporary literature. Arthur Miller’s *The Crucible* (1953) and W.H Auden’s *The Age of Anxiety: A Baroque Eclogue* (1947) were telling examples of literary social criticism. Both works represented of contemporary public hysteria and criticized of the loss of core conservative values. In

¹⁹¹ Thomas Patrick Doherty, *Cold War, Cool Medium: Television, Mccarthyism, and American Culture*, Film and Culture (New York: Columbia University Press, 2003), 60-79, 215-30.

¹⁹² Robert S. Robins and Jerrold M. Post, *Political Paranoia: The Psychopolitics of Hatred* (New Haven, CT: Yale University Press, 1997), 36-50 and Robin, *Fear: The History of a Political Idea*, 200-25.

contrast, W.T. Lhamon's *Deliberate Speed* (2002) and Eric Goldman's *The Crucial Decade – and After* (1960) characterized the era as one of social and political complacency.¹⁹³ Widespread change in technology, social structure, international political stability, and material culture created uncertainty in the minds of the American public.¹⁹⁴

Shifting food patterns

Each shift in the development of American society through the nineteenth and twentieth centuries affected cranberries and their relationship to American society and food patterns. Increased distribution, visibility, and availability, as well as increased production, all helped put cranberries on most American Thanksgiving and Christmas dinner tables.¹⁹⁵

The well-documented population shift from dispersed rural areas to urban centers throughout the early twentieth century disrupted the average individual's access to fresh foods. The accompanying shift from non-money to money economies in cities made acquisition of agricultural products through barter very difficult.¹⁹⁶ The late nineteenth century had witnessed the beginning of a shift from fresh produce as the most common foodstuff to processed foods. As the type of foods changed to processed and canned or packaged foods, the amounts of added chemicals in the average person's diet

¹⁹³ Teresa Alves, "'Some Enchanted Evening'--Tuning in the Amazing Fifties, Switching Off the Elusive Decade," *American Studies International* 39, no. 3 (2001), 25-38.

¹⁹⁴ Harvey Green, *The Uncertainty of Everyday Life, 1915-1945*, 1st ed. (New York: Harper Collins Publishers, 1992), 1-15.

¹⁹⁵ Eck, *The American Cranberry*, 20-33.

¹⁹⁶ Levenstein, *Revolution at the Table: The Transformation of the American Diet*, 24.

skyrocketed. The ease and availability of acquiring fresh foods was greatly reduced in the burgeoning cities, exacerbating the problem.¹⁹⁷ The development of a wide variety of prepackaged and processed convenience foods during the 1940s and 1950s contributed to a shift in the perception of eating itself. The modern trend was toward quick, easy, and “ready to eat”, while home-made and cooking from scratch became quaint luxuries or even low status cooking methods.¹⁹⁸

Chicago provided an excellent example of the sequence of technological and social events occurring around the country, including large-scale population growth, infrastructure development, and transportation revolutions. As the closest major city to Wisconsin, Chicago’s industrial and metropolitan development strongly affected the development of the cranberry industry in the region. From completely natural bogs, hand picking, and wagon transportation in 1861, through railroads and the interstate highway system, the production and distribution of Wisconsin cranberries mirrored the growth and success of their largest neighbor.¹⁹⁹ As the Chicago region developed and the population grew, demand for foods grew, spurring new bog development. Industry then accommodated the ready market by building processing plants and distribution systems.²⁰⁰

¹⁹⁷ Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, 80-85, 124-40.

¹⁹⁸ Levenstein, *Revolution at the Table: The Transformation of the American Diet*, 109.

¹⁹⁹ William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1991), 55-93.

²⁰⁰ Perry Duis, *Challenging Chicago: Coping with Everyday Life, 1837-1920* (Urbana, IL: University of Illinois Press, 1998), 113-42.

Food fear and other fears

Trust was one of the central elements of the public's anxiety during the cranberry scare. A population must, as a whole, be confident in its food supply and trust that it will remain abundant and pure. The history of food and its processing and consumption demonstrated that abundant food was not always the case. The inability of a person or society to trust the food supply can lead to conflict and social chaos. Thus the public developed a longstanding mistrust and fear based on real concerns.²⁰¹

The long history of food fear was a central element in the cranberry scare. The laws enacted to protect the public from outright lies, ineffectual herbal remedies, "snake oils", and other forms of food misinformation left gaps and required updating. The newest threats of chemicals and adulteration of the food supply in 1959, such as persistent pesticides, animal growth hormones, and industrial wastes, threatened to poison whole populations rather than individuals.²⁰²

Trust in government and political leaders, the media, and public servants were also important elements during the cranberry scare. Although some segments of the population viewed governmental cynically, most citizens took government action seriously. If the government said people should be afraid, they were afraid.

Another critical element of the scare was the general lack of knowledge about cancer and its potential relationship to chemicals and food. In 1959, cancer was very misunderstood, frightening and an almost universal death sentence. Statistics indicated a

²⁰¹ Ferrières, *Sacred Cow, Mad Cow: A History of Food Fears*, 1-8, 325-29.

²⁰² Morris and Bate, *Fearing Food: Risk, Health and Environment*, 141-65.

rising incidence of the disease bordering on an epidemic. Hysteria over anything thought to cause it was a predictable response.²⁰³ Even the simple use of the word cancer incited fear. As one reporter noted, “Growers regard the repeated use of the two words cancer and cranberries in the same sentence as a harmful, if not lethal, coupling of thought in the public mind.”²⁰⁴

Several other social stresses also weighed on the American public in 1959. The ever-present fear of Cold War nuclear annihilation appeared in the constant flow of newspaper articles about Soviet military buildup and international conflict.²⁰⁵ The general political climate of foreign and domestic conflict created widespread social tension. The ending of the Korean conflict, followed by the French defeat in Viet Nam and the division of North and South Viet Nam were background stresses.²⁰⁶ Social unrest and racial tensions were also strong elements of the general environment of social tension in the U.S. during the scare.²⁰⁷

Technology and media

Although the 1950s was a period of technological innovation and integration of the new technologies into daily life, there was nonetheless a generalized fear of technology surrounding the pace of integration. Integration of new technologies into the

²⁰³ Blank, "The Delaney Clause: Technical Naïveté and Scientific Advocacy in the Formulation of Public Health Policies," 1086.

²⁰⁴ “Cranberry Labeling – Let States Handle It,” Newark Evening News, Nov. 13, 1959, p.1.

²⁰⁵ “Khrushchev: Fast A-Subs Revealed,” San Francisco Chronicle, Nov. 11, 1959, p.11; “U.S. Lag in Rocket Thrust,” San Francisco Chronicle, Nov. 11, 1959, p.13.

²⁰⁶ Eric Frederick Goldman, *The Crucial Decade--and After: America, 1945-1960* (New York: Vintage Books, 1960), 174-90.

²⁰⁷ Doherty, *Cold War, Cool Medium: Television, Mccarthyism, and American Culture*, 24-30, 70-78.

fabric of society and daily life meant change, and change generated anxiety. Rapid development and integration of new technologies changed society in unexpected ways and led to misunderstanding and confusion by outpacing society's ability to fully integrate a new technology before the next one was introduced.²⁰⁸ The introduction of synthetic compounds in industry, the accompanying growth and proliferation of the economic impact of those industries, and resultant difficulties with residues, disposal, and cleanup of the compounds is an excellent example of the problem.

Throughout these broad social changes, technology remained a constant factor driving the various forces. Media technologies, such as radio and television, and their availability to the public made information transfer almost instantaneous. Developments in farming technology provided ever increasing productivity. The burgeoning chemical industry provided technologies to achieve undreamt of health and prosperity in the form of safer abundant foods. Processing, packaging, and refrigeration provided technology for safe storage and consumption of foods, greatly extending their shelf lives. Technologies in the home, such as electric refrigerators, dishwashers, and television reshaped the American household.²⁰⁹

Technology in several forms was a catalyst throughout the scare. Manufactured chemicals, production processes, and scientific testing all helped to generate an environment of public concern. The chemical industry, the creation and tailoring of chemicals to specific uses and the need to understand their effects all involved

²⁰⁸ Marshall McLuhan, "Effects of the Improvements of Communication Media," *The Journal of Economic History* 20, no. 4 (1960), 566-75.

²⁰⁹ Doherty, *Cold War, Cool Medium: Television, Mccarthyism, and American Culture*, 105-33.

technologies critical to the genesis of the scare. The scientific testing procedures used to analyze and assess aminotriazole also fueled the scare by demonstrating how difficult it was to know whether cranberries were contaminated.²¹⁰ How and where people got their information was important during the scare.

The information gathering habits of the American public in 1959 were very similar to those of today. People gathered much of their information about society and local, regional, and national happenings directly from the media. This media-centered environment for gathering information created a focal point for the transmission of political and social agendas. People tended to decide how they thought and felt based on what they saw or heard in the media, and the tone and agenda of the media had a substantial influence.²¹¹ How people used and perceived their news sources in 1959 was an important part of the conjunction of fear and technology in the cranberry scare. The various forms of public media were both leisure activity and source of serious information, but how the information was perceived made the difference in an individual's response. Americans were conditioned from the turn of the twentieth century to take media and the news seriously.²¹²

The authority of the written word, as well as broadcast media, has long had power. People have tended to believe and take seriously things they heard from authoritative sources, no matter what they heard. Orson Welles' famous broadcast of *The War of the Worlds* was a perfect example. Although only a small percentage of people

²¹⁰ Jukes and Shaffer, "Antithyroid Effects of Aminotriazole," 296-97.

²¹¹ Friedman, *Communicating Uncertainty: Media Coverage of New and Controversial Science*, 43-55.

²¹² Doherty, *Cold War, Cool Medium: Television, McCarthyism, and American Culture*, 1-18.

were confused by the radio drama, it was telling that even a small percentage of Americans would react hysterically to something so clearly fictional. During the cranberry scare, the public heard a story of possible chemical poisoning, the spread of potentially incurable disease, and the battle waged against these threats. A strong reaction was predictable, whether or not the scientific and political information was accurate and clear.²¹³

The ability to disseminate information quickly and effectively both contributed to and eventually defused the public fear reaction during the scare. Although the initial FDA news conference itself was not televised live, the story entered the radio and television airwaves within hours. Both television and radio, like the telegraph and telephone, largely eliminated communication delays that might otherwise have helped limit the scope of the scare.²¹⁴ The day after the news conference, most major newspapers featured front-page stories on cranberries and chemical contamination, such as “Northwest Cranberries Ordered Off Market” and “Some of Cranberry Crop Tainted by Weed-Killer, U.S. Warns.” Some reported the story as it developed, providing meaningful scientific discussion, while others commented on the political and economic situations. The result was an often contradictory mixture of opinion and fact.²¹⁵

Industry leaders and politicians, particularly Ocean Spray General Manager Ambrose Stevens and Senator John Kennedy, appeared on radio and television in defense of cranberries. Both men opposed the FDA ban as unnecessary, although they

²¹³ Robin, *Fear: The History of a Political Idea*, 73-94.

²¹⁴ McLuhan, "Effects of the Improvements of Communication Media," 566-75.

²¹⁵ “Northwest Cranberries Ordered Off Market,” *Wisconsin Rapids Tribune*, Nov. 9, 1959, p.1; “Some of Cranberry Crop Tainted by Weed Killer, U.S. Warns,” *New York Times*, Nov. 10, 1959, p.1.

also acknowledged that it was within Secretary Flemming's authority. Their attempts to calm fears may have had some effect, but despite a generally balanced number of articles favoring the FDA or the cranberry industry, public opinion leaned toward concern.²¹⁶

Newspapers, radio, and television increased the tension during the scare, not by spreading false information, but by continuing to focus on the story. Without the consistent reporting of the inherently anxiety-producing and scientifically controversial material, the public might not have reacted so strongly. Newspapers spread most information about the cranberry scare, but television and radio were close competitors. I found no records indicating how many times or in what detail the broadcast media covered the scare, but television spread much of the immediate concern in the first few days. Newspapers and magazines continued the coverage through December 1959.²¹⁷

An estimated 44 million American households, approximately 86% of the total, owned at least one television set in 1959, while radio was almost universal in the American home. Based on advertising revenue statistics, television was edging out radio as the primary source of news and entertainment two to one.²¹⁸ Television was also a focal point for Cold War fears and imagery, including public service broadcasts about sheltering from nuclear blasts and the anti-communist crusades of Senator Joseph McCarthy (R-Wis).²¹⁹ The broad appeal of television and its ability to transmit

²¹⁶ Ocean Spray Newsletter, Vol. 2, No. 12, December 21, 1959 (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin), 7.

²¹⁷ "Then the Tornado", Ocean Spray Newsletter, Vol. 2, No. 12, (Wisconsin Rapids, Wisconsin), 7.

²¹⁸ Cobbett Steinberg, *Tv Facts* (New York: Facts on File, Inc., 1980), 141-4.

²¹⁹ Doherty, *Cold War, Cool Medium: Television, Mccarthyism, and American Culture*, 161-215.

information and imagery instantly across the entire U.S. were major elements in the spread of the cranberry scare.

The cranberry scare not only affected the cranberry industry but also changed the holiday menus of millions of Americans. Despite its brief duration and the complete lack of any recorded cases of aminotriazole-related health problems, the scare infected millions of American households with confusion and panic. The events of November and December 1959 consumed innumerable hours of media and administrative time, forced scientific institutions all over the nation to drop their projects to test cranberries, and set an entire industry on the edge of financial ruin.²²⁰

Public uncertainty or fear is a construction of several societal factors. Geographic distinctions and separations, group psychology, socio-economic factors, and even factors such as race, gender, and age in a population can have effects on the prevalent uncertainties.²²¹ Although social tension or scientific misunderstanding did not directly cause the cranberry scare, both helped set the stage for the event. The public responded to the scare and the subsequent media coverage with fear and confusion, mirroring the inconsistent and confusing response across the American media spectrum, including newspaper, radio, and television.²²²

²²⁰ "Then the Tornado", Ocean Spray Newsletter, Vol. 2, No. 12, (Wisconsin Rapids, Wisconsin), 2-8.

²²¹ Friedman, *Communicating Uncertainty: Media Coverage of New and Controversial Science*, 43-55.

²²² Lynn Spigel, *Make Room for Tv: Television and the Family Ideal in Postwar America* (Chicago: The University of Chicago Press, 1992), 36-72.

CHAPTER V

THE CRANBERRY SCARE OF 1959

From the standpoint of the cranberry industry, the cranberry scare occurred at one of the most inopportune moments possible. The cranberry industry in 1959 was as strong as it had ever been in terms of both productivity and crop values. Crop yields met or exceeded all expectations for the season, continuing the growth trend of the industry begun in the 1940s. Although overall bog acreage was slowly decreasing, improving technologies promised ever greater productivity per acre throughout the industry. Prices were at record levels, and expectations for future development and increased yields were high.²²³

Marketing and advertising of cranberries began to be a factor in cranberry distribution in the early 1930's with the development of several large berry cooperatives. The 1922 Capper-Volstead Act, which provided limited exemptions from antitrust prosecution for farmers marketing their products as a group, enabled the new cranberry cooperatives.²²⁴ Berry marketing and consumption maintained a strong regional character based on local organizations and traditional tastes. Berries, especially fresh and frozen, were marketed in a wide array of varieties under numerous labels. Advertising and marketing on a national scale were weak elements of the cranberry industry until the 1950s.²²⁵ Ocean Spray was the primary innovator marketing nationally by consolidating

²²³ Eck, *The American Cranberry*, 33-40.

²²⁴ David Volkin, *Understanding Capper-Volstead*, (Washington, D.C.: U.S. Dept. of Agriculture, Agricultural Cooperative Service, 1985), 1-10.

²²⁵ Eck, *The American Cranberry*, 41.

advertising efforts and offering innovative cranberry products during non-holiday periods.²²⁶

Increased efforts to find new markets resulted in a large increase in processed cranberries, including jams, juices, and dried berries, from 17% of the crop in 1934 to 57% in 1954. As a result, per capita consumption of canned versus fresh berries doubled between 1934 and 1954.²²⁷ A 1958 market survey concluded that sales of fresh and processed berries were out of proportions with production but did not interpret the problem as an industry crisis. The report suggested that the best way to reduce the annual industry surplus was to increase the sales of fresh berries.²²⁸

In a September 18, 1959 letter to the membership of the Ocean Spray cooperative, Ocean Spray General Manager Ambrose Stevens speculated that the existing pace of orders would dispose of the entire 1958 crop before the harvest in 1959. Although much of the 1958 crop would still not be shipped before the new harvest, selling the entire crop would result in no carryover for the first time in many years. Stevens labeled disposing of an entire year's crop through sales and future orders without a substantial carryover as "utopia third class." He proposed that "utopia second class," the total shipment of a previous crop before a new harvest, might occur before 1965 with the help of new products and marketing campaigns.²²⁹

²²⁶ "Facts on Ocean Spray Cranberry Juice Cocktail" (Ocean Spray Cranberries, Inc. 1960 Hanson, Massachusetts), 1-7.

²²⁷ United States. Congress. House. Agriculture Committee., *Cranberries, Hearing before the Subcommittee on Domestic Marketing Of ..., 84-2 on H.R. 8384, June 5, 1956* (1956), 57.

²²⁸ Beattie, J. Richard and Irving Everett Demoranville. *A fresh cranberry market survey*. (Amherst, MA: Massachusetts Agricultural Experiment Station, University of Massachusetts, 1958), 1-10.

²²⁹ "Scare Hurts, Crop Record," *Wisconsin Rapids Tribune*, Nov. 11, 1959, p.1.

The economic state of the industry was a different story. Although the canning and distribution of cranberry products remained profitable, increasing overproduction was making the crop less profitable for the farmer, who often had to wait until the middle of the following year to be paid for last year's crop. The carryover problem had become worse every year for the previous decade, averaging between 200,000 and 300,000 barrels, or 7% to 31% of the annual crop, carried over annually since 1949. Annual carryovers put a great deal of pressure on the farming, canning and distribution industries to find a way to handle the surplus before the next year's harvest.²³⁰

An important contribution to the growing cranberry productivity was the development of increasingly effective agricultural chemicals. The U.S. Department of Agriculture approved the herbicide Aminotriazole, also known by the trade names Amitrole and Weedazol and synthesized chiefly by American Cyanamid and the AmChem Co., in 1953 for use on pest grasses and weeds. Although not immediately approved for use in cranberry bogs, the compound quickly became a staple for managing spring weeds. It was a popular and effective compound that targeted certain weed species, such as poison ivy and wheat grass, but did not damage the cranberry vines or fruit due to their different growing cycles. Aminotriazole was widely used in the Northwestern growing region, where pest plants were a serious problem.²³¹

The properties of aminotriazole, a synthetic, colorless, odorless, crystalline powder, had been under investigation since its discovery by the American Chemical

²³⁰ United States. Congress. Senate. Agriculture and Forestry Committee., *Cranberry Marketing Orders, Hearing before a Subcommittee Of ..., 85-1 on S. 1680 ..., April 29, 1957*, 46-7.

²³¹ Seeman, "Cranberry Industry of the Pacific Coast," 181.

Paint Company in 1952. Aminotriazole (3-amino-1, 2, 4-triazole) is a chlorophyll inhibitor. Chlorophyll inhibitors induce chlorosis, or the inability of the plant to produce chlorophyll, in new leaves and reduce growth overall.²³² When ingested by some mammals, aminotriazole acts as a thyroid suppressant, temporarily reducing glandular activity. The effect is reversible with time, and there is no evidence of accumulation of aminotriazole or any metabolic byproducts in tissues.²³³ Aminotriazole exhibits longer persistence in soil or water than other similar herbicides, with a half-life of approximately 56 days.²³⁴

The USDA approved the non-food use of aminotriazole in 1956, and only approved it for use on cranberry bogs in 1958. The FDA was aware in 1956 that aminotriazole could be drawn into the plant's systems and be deposited in the developing cranberries. USDA instructions for use in cranberry bogs specified only post-harvest use to avoid the possibility of contaminating developing fruit. If used before the emergence of the fruit buds, no detectable residue remained within or on the ripe fruit. USDA guidelines allowed a very narrow window, which constrained the already tightly scheduled cranberry harvest.²³⁵ Industry, government and cooperative instructions carefully warned against improper use of the chemical. Use guidelines circulated throughout the industry in the form of grower association newsletters and chemical industry notices from 1957 through 1959. The Massachusetts Extension Service

²³² E. E. Schweizer and B. J. Rogers, "Structural Requirements of Amitrole for Physiological Activity," *Weeds* 12, no. 1 (1964): 9-10.

²³³ Jukes and Shaffer, "Antithyroid Effects of Aminotriazole," 296-97.

²³⁴ American Cyanamid Material Safety Data Sheet, November 6, 1959, Cranberries 11/6/59-11/17/59, box 759, John Fitzgerald Kennedy Pre-Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts).

²³⁵ American Cyanamid Material Safety Data Sheet, November 6, 1959, Cranberries 11/6/59-11/17/59, box 759, John Fitzgerald Kennedy Pre-Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts).

produced and distributed nationally a detailed educational program for farmers and processors in all major growing regions.²³⁶

Despite the efforts to educate growers in the use of aminotriazole, some intentionally or unintentionally failed to comply. Roughly 40% of the 1957 cranberry crop from Washington and Oregon contained aminotriazole residues, indicating a major failure of instruction in that region. The industry voluntarily quarantined the contaminated crops pending a determination by the FDA on tolerances, and the FDA warned the industry that no residues would be allowed. American Cyanamid attempted twice in 1957 and 1958 to get aminotriazole registered with a tolerance of 0.7 parts per million. The FDA refused the first application on the grounds that the FDA had not yet completed its chemical testing to determine the biological properties of the substance. The second application was refused because American Cyanamid's completed research data indicated that the weed-killer was a carcinogen. All applications were withdrawn by American Cyanamid in May 1959, and the FDA officially notified the cranberry industry of its findings on aminotriazole in June.²³⁷

With millions of pounds of the 1957 and 1958 crops in storage and a great deal riding on FDA approval, the industry was aware of the potential consequences of further misuse of aminotriazole in the bogs. Before the announcement of aminotriazole as a

²³⁶ "Report of the Educational Program Developed to Acquaint Massachusetts Cranberry Growers with the Proper Use of Aminotriazole", undated, Cranberry Industry 11/18/59-3/30/61, box 732, John Fitzgerald Kennedy Pre-Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts), 1-8.

²³⁷ Report, January 26, 1960 (Laguna Niguel, California), 6.

carcinogen, cranberry industry leaders expected some degree of tolerance to be set.

Thus, the June no tolerance announcement came as a surprise.²³⁸

As a result of the announcement, the NCA, the largest and most influential of the cranberry cooperatives, reiterated its position:

At the present time, aminotriazole can be used on cranberries only in approved post-harvest applications. No tolerance for this substance in cranberries has been established. *Berries from cranberry vines which have been treated with aminotriazole in any manner other than the approved post-harvest application will not be accepted by [the] National Cranberry Association.*²³⁹

A September 18, 1959, special letter to the industry from the NCA noted that the zero tolerance ruling was dangerous and the industry could not afford even one violation. It warned, “Ocean Spray will not accept or receive cranberries from members whose plantations have been treated in any manner whatsoever with aminotriazole if the treatment took place after the date of the receipt of this letter.” This amounted to a total ban within the Ocean Spray cooperative, and required signed certification, under penalties of perjury, that individual growers had not used aminotriazole on the 1959 crop after the initial September warnings.²⁴⁰

Contamination of the 1957 crop led to FDA seizures of large amounts of Oregon cranberries pending analysis. Continued use of aminotriazole suggested possible contamination of the 1958 and 1959 crops. The FDA did not test the 1958 crop during that growing season, because the FDA assumed that its seizure actions and warnings in

²³⁸ “Word from Washington on Aminotriazole”, National Cranberry Association newsletter Vol. 11, No. 7, July 9, 1959 (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin), 2.

²³⁹ Ibid, 2-3. Emphasis underlined in original.

²⁴⁰ “The Sales Picture”, National Cranberry Association Special Letter to Membership, September 18, 1959 (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin), 3.

1957 would curtail improper use of aminotriazole.²⁴¹ The FDA's formal refusal to set a tolerance for residues of aminotriazole meant the eventual destruction of the contaminated portion of the 1957 crop in quarantine and made further investigation inevitable. The FDA began gathering information on aminotriazole use on the 1958 and 1959 crops in July 1959 immediately after the no-tolerance announcement. Testing of the 1959 crop began in October 1959 using a new process developed by the FDA designed specifically for aminotriazole residues.²⁴²

On November 7 Secretary Flemming contacted Ocean Spray president George P. Olssen and general manager Ambrose E. Stevens. Stevens confirmed that no one had checked for aminotriazole on the 1958 crop and that growers might have shipped some contaminated lots in 1959.²⁴³ One day later Commissioner Larrick and Secretary Flemming decided to announce their findings to the public after confirming that several batches of contaminated 1959 berries shipped across state lines reached markets in the Northwest.²⁴⁴

On November 9, 1959, HEW Secretary Arthur Flemming announced to the press at his regular weekly press conference that FDA investigators had found residues of aminotriazole, resulting from improper application, on portions of the 1959 cranberry crop from Oregon and Washington State, and that the chemical caused cancer in laboratory animals. Similar residues had resulted in the quarantine and destruction of

²⁴¹ Report, January 26, 1960 (Laguna Niguel, California), 10.

²⁴² Ibid, 6-7.

²⁴³ Statement by Arthur S. Flemming, November 9, 1959 (Abilene, Kansas), 3-4.

²⁴⁴ Report Presented by Secretary of Health, Education, and Welfare Arthur S. Flemming to the Committee on Interstate and Foreign Commerce of the House of Representatives, January 26, 1960, General Correspondence, Cranberry Flap, box 187, Pre-Presidential papers of Richard M. Nixon, NARA Pacific Region(Laguna Niguel, California), 1-12.

approximately three million pounds of cranberries from the 1957 season. Secretary Flemming pointed out that the cranberry industry was willingly cooperating in the testing for contamination and the destruction of any tainted cranberries.²⁴⁵ When asked about the ability of the public to determine the safety of the cranberry products already on the market, Secretary Flemming replied that there was no way for the average consumer to know whether the cranberry products on the shelves and in their pantries were safe to consume. His advice was to be on the safe side and not buy or use them.²⁴⁶

Secretary Flemming was well prepared with technical facts and industry data, and he was well aware of the potential consequences of his statements. It is possible that had he not mentioned the concerns over aminotriazole and had worked with the industry to eliminate the problematic compound, the scare would never have occurred. However, the law was clear, and Flemming's choice was limited to the nature and severity of the warning to be issued. He did not have the latitude to bypass FDA warning procedures to soften the potential blow to the cranberry industry. His cautionary statement was the spark that generated the sudden firestorm of media and administrative activity that became the cranberry scare. The announcement spread quickly on television and radio stations and into every major newspaper in the US by November 10th. Although the federal government did not actually ban or restrict the sale of cranberries or cranberry products, Flemming's warning had an "immediate and drastic effect" on both the public and the industry.²⁴⁷

²⁴⁵ Statement by Arthur S. Flemming, November 9, 1959 (Abilene, Kansas), 1-4.

²⁴⁶ "Some of Cranberry Crop Tainted by a Weed-Killer, U.S. Warns," p.1.

²⁴⁷ Peterson, Cross, and Tilden, *The Cranberry Industry in Massachusetts*, 5.

The cranberry industry was poorly prepared to deal with the sudden onslaught of attention from both the government and public. Composed of many hundreds of independent growers and grower associations across the nation, the cranberry industry had no central authority to defend it from negative publicity. Ocean Spray, the largest of the grower associations (representing 70-75% of cranberry producers) and a central figure in all cranberry industry decisions, took the lead in trying to stave off complete disaster.²⁴⁸ Flemming notified the cranberry industry leaders of the pending statements the evening before the press conference, but refused industry efforts to forestall the announcement. The FDA accepted Olssen's request to add a statement indicating the industry was working on a plan to segregate contaminated and uncontaminated berries and Steven's request for a statement that the industry was cooperating fully with the investigation.²⁴⁹

Secretary Flemming's announcement just before the holiday season was the worst possible timing for the cranberry industry. By early November, more than half of the year's crop was in one of the many stages of harvesting and sorting or in warehouses awaiting sale or processing.²⁵⁰ Flemming's statements triggered cancellations of orders and an almost complete cessation of processing.²⁵¹ Widespread fear of contamination prompted nationwide supermarket bans of all cranberry products and the removal of cranberry products from store shelves throughout the United States. Newspapers pulled

²⁴⁸ "The Sales Picture", September 18, 1959 (Wisconsin Rapids, Wisconsin), 1-3.

²⁴⁹ "Then the Tornado", Ocean Spray Newsletter, Vol. 2, No. 12, (Wisconsin Rapids, Wisconsin), 2.

²⁵⁰ Eck, *The American Cranberry*, 284-6.

²⁵¹ Lipman and Ocean Spray Cranberries Inc., *Labor of Love: My Life's Work with Cranberries and Ocean Spray*, 109-16.

ads involving cranberry products, and stores suggested alternatives to cranberry sauce for holiday meals and recipes, such as applesauce and spiced pears. Restaurants removed cranberries and cranberry products from their menus. The military restricted the distribution of cranberry products to servicemen abroad. Orders for cranberries were halted nationwide, freezing the shipment of millions of pounds of berries.²⁵²

The sudden and intense public reaction surprised both industry and government. Although the FDA was aware of the potential consequences of the timing, Secretary Flemming chose to make the announcement, citing public safety concerns. He feared that delaying the announcement and testing would expose the public to a potentially dangerous chemical.²⁵³ The Eisenhower administration found itself scrambling to alleviate the sudden problem. The USDA focused on finding ways to relieve the stress on the industry, and the President's staff worked to bring the USDA and HEW to a consensus. Meetings including Secretary Benson, Secretary Flemming, and President Eisenhower's staff showed they were working together, but underscored the communication gaps between the USDA and HEW.²⁵⁴ The USDA and the HEW pressured President Eisenhower from different angles not only to take sides in the departmental conflict but also to take a stronger stand in public. The president left White House involvement in the issue to his science advisor, George Kistiakowski, who took

²⁵² "Great Minds Split over Cranberries," San Francisco Chronicle, Nov. 11, 1959, p.1.

²⁵³ Statement by Arthur S. Flemming, November 9, 1959 (Abilene, Kansas), 3.

²⁵⁴ Communication Between Health, Education, and Welfare and Department of Agriculture, December 23, 1959, Central files, Official File, box 542, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas); "Weed-Killer Testing of Cranberry Crop Aided by Growers," New York Times, Nov. 12, 1959, p.20.

charge of communicating between the White House and the various committees, departments, and officials involved.²⁵⁵

The USDA and FDA exhibited clear differences in opinion and focus about chemical regulation and protecting the public. The FDA and its parent department HEW were concerned with protection of the public and administration of The Food, Drugs, and Cosmetics Act. The USDA was concerned more with the industry and farmers during the scare. The events of the scare underscored the need for improved communication between the USDA and the FDA.²⁵⁶ Secretary Benson of the USDA was refused opportunity to review Flemming's press statements before the conference, and he had no opportunity to insert or suggest alternative wording or explanation. He was told that Secretary Flemming did not approve press releases until just before the conference. The White House was also not informed prior to the announcement.²⁵⁷ This communication disparity would become a larger administrative issue later in the scare.

The FDA began immediately to determine the extent of the contamination, as well as to calm the public. Samples all over the United States were sent to state and federal testing facilities for analysis. In addition to FDA scientists, state agricultural departments, agricultural experiment stations, and universities cooperated and conducted the very time consuming and detailed process of detecting and measuring the minute

²⁵⁵ Oral history interview(OH-412), George Kistiakowski, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

²⁵⁶ "Case Would End Food Confusion," Newark Evening News, Nov. 23, 1959, p.3.

²⁵⁷ "Conversation Re: Cranberries", November 17, 1959, WHO Staff Research Group, Records 1956-61, box 10, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1-2.

amounts of the chemical.²⁵⁸ Canned products produced with berries from 1957 and 1958 were also tested to determine whether contamination was present after processing.²⁵⁹

Lots of berries awaiting results were quarantined, and contaminated lots were seized and destroyed. Many bogs remained un-harvested, so some berries remained on the vine. The contaminated berries that caused the initial stir were from northwestern bogs, where the environment typically required heavier use of chemicals to control pest species. Nonetheless, the FDA tested samples from all growing regions, preventing any one region from making up the marketing shortfall of another. The FDA eventually reported contamination in all three primary growing regions, although many farmers in those regions denied ever using aminotriazole. Misuse of aminotriazole before the industry ban went into effect or by growers outside the major cooperatives could still have resulted in residues and was possibly the source of some contaminated lots.²⁶⁰ Some contamination possibly resulted from spraying by road crews not associated with the nearby cranberry bogs, but the speculation was never confirmed.²⁶¹

Secretary Flemming scheduled a public meeting for November 18 so that the cranberry industry could offer its plan to segregate contaminated berries from clean. The heart of the plan was the cooperative testing of berries between the FDA and cranberry industry laboratories to speed the process of returning berries to the shelves, and the labeling and subsequent announcement of cleared batches. An important element of the

²⁵⁸ "Cranberries Tested and Labeled Pure are Approved for Sale," *Wisconsin Rapids Tribune*, Nov. 19, 1959, p.1; "Weed-Killer Testing of Cranberry Crop Aided by Growers," p. 1.

²⁵⁹ "Then the Tornado", *Ocean Spray Newsletter*, Vol. 2, No. 12, (Wisconsin Rapids, Wisconsin), 4-8.

²⁶⁰ "Proceedings of a Department of Health, Education, and Welfare Conference on Cranberries", November 18, 1959, General Correspondence, Cranberry Flap, box 187, Pre-Presidential papers of Richard M. Nixon, NARA Pacific Region (Laguna Niguel, California), 47-48.

²⁶¹ "US Inspecting Cranberry Bogs," *Newark Evening News*, Nov. 11, 1959, p.1.

event was a call from cranberry industry leaders to help reverse the trend of “fear hysteria” and to restore confidence in the industry’s products.²⁶² Industry leaders and congressional leaders from cranberry-growing states supported the proposed plan, citing its effectiveness and urgency.²⁶³

The scientific quandary driving the cranberry scare resulted from the restrictions of the Delaney Clause and the FDA’s statutory inability to set a residue tolerance for aminotriazole. During the scare, FDA testing only had to find the threshold amount in a sample to declare it contaminated. In the case of aminotriazole, the FDA test could determine contamination at 0.05 parts per million.²⁶⁴ Experimentation during the scare itself significantly streamlined the test, resulting in a more accurate test sequence by December 1959. The reported 50% increase in sensitivity led to a predictable increase in contamination discoveries late in December, as the more efficient test could detect much smaller concentrations of aminotriazole. Because the test only had to detect aminotriazole reliably at any level, the new test bypassed determination of concentration and focused on detection.²⁶⁵

The FDA destroyed the 4.8 million pounds of contaminated berries voluntarily set aside from the 1957 crop without testing any of the rest of that year’s 100 million pound crop. The FDA tested the 1958 and 1959 crops simultaneously. Canners had processed most of the 1958 crop before testing, and only one instance of contamination

²⁶² “A Plan Submitted on Behalf of the Cranberry Industry”, November 18, 1959, Cranberry Collection, Research Materials (Wisconsin State Cranberry Growers Association archives), 1-2.

²⁶³ *Ibid.* 10-22.

²⁶⁴ “Wisconsin Alumni Research Foundation, Methods for Residues of 3-Amino-1,2,4 triazole in Cranberry Fruit”, October 30, 1959 and “Wisconsin Alumni Research Foundation, Assay Report”, November 9, 1959, Cranberry Collection, Research Materials (Wisconsin State Cranberry Growers Association archives), 1-2.

²⁶⁵ HEW Press Release, December 15, 1959 (Laguna Niguel, California), 1-2.

was found in the tested samples. The processing may have broken down the aminotriazole or diluted it below detectable levels.²⁶⁶ FDA investigators found approximately 0.3% of the overall 1959 crop to be contaminated, as well as contamination in samples from all three growing regions. Testing ceased in January 1960.²⁶⁷ Despite the continued presence of aminotriazole residues in 1959, this drop in contamination from 5% in 1957 to 0.3% in 1959 probably resulted from the industry-wide ban placed on the chemical.

Although cranberries labeled as being aminotriazole-free were available in most regions by Thanksgiving, sales of cranberry products were down to 20% of normal, and many stores and restaurants left cranberries off their shelves and menus entirely. Industry sales returned to near-normal levels by Christmas, but by then the damage had been done.²⁶⁸ After the depressing 1959 Thanksgiving season, USDA Secretary Benson proposed an intensive marketing effort to help the cranberry industry. In conjunction with continued labeling and Secretary Benson's support, industry officials sought to enlist the aid of other industries and the media in restoring positive public perception of cranberries before Christmas.²⁶⁹ The cranberry industry also planned to spend more on marketing and publicity to help restore its image as well as to open markets for new cranberry products, although it did not help cranberry sales in the short-term.²⁷⁰

²⁶⁶ Proceedings, November 18, 1959 (Laguna Niguel, California), 24.

²⁶⁷ Report, January 26, 1960 (Laguna Niguel, California), 7-12.

²⁶⁸ "Then the Tornado", Ocean Spray Newsletter, Vol. 2, No. 12, (Wisconsin Rapids, Wisconsin), 5-6.

²⁶⁹ "Next Target Christmas," Newark Evening News, Nov. 13, 1959, p.7.

²⁷⁰ "Benson Supports Cranberry Drive," New York Times, Nov. 21, 1959, p. 21; "Industry to Spend More Promoting Cranberries," Wisconsin Rapids Tribune, Dec. 3, 1959, p.7.

The nature and timing of the scare played directly into public uncertainties and fears. Concern over the purity and safety of food had been part of American popular culture for more than a century by the time of the scare. Articles, books and popular concerns over processing and chemicals in food, including Upton Sinclair's *The Jungle*, created significant public concern. Dangerously contaminated products, FDA seizures and investigations, and public anxiety helped set the stage in 1959.²⁷¹ Medical misunderstanding and a general fear of cancer also played into public fears.²⁷² The combination of all these factors in one event, at a time when the information spread around the nation almost instantly, provided a perfect environment for the cranberry scare.

Secretary Flemming prepared his November 9 press conference based on the confirmed contamination in 1957 and the refusal to set a tolerance for aminotriazole in 1958 and 1959. He reacted immediately in defense of the public when he learned that contaminated berries had been shipped to market in Oregon.²⁷³ Secretary Flemming's claims about aminotriazole residues on some cranberries were never in question. However, cranberry officials immediately questioned the timing of his announcement as unnecessarily destructive of industry reputation and considered it an unnecessarily punitive action.²⁷⁴

²⁷¹ Hickmann, *The Food and Drug Administration (FDA)*, 35-47.

²⁷² United States. Congress. House. Committee on Interstate and Foreign Commerce., *Health Inquiry. Hearings before the Committee on Interstate and Foreign Commerce. House of Representatives. 83d Congress. 1st Session, on the Causes, Control and Remedies of the Principal Diseases of Mankind, Oct. 7, 8, and 9, 1953*, 136-45.

²⁷³ Report, January 26, 1960 (Laguna Niguel, California), 10; Furman, Bess, "Accord Reached on Cranberries," *New York Times*, Nov. 19, 1959, p 26.

²⁷⁴ Lipman and Ocean Spray Cranberries Inc., *Labor of Love: My Life's Work with Cranberries and Ocean Spray*, 112-14.

1960 was a presidential election year, and rumors of Flemming's place as a possible Vice Presidential candidate appeared in cranberry scare editorials.²⁷⁵ Secretary Flemming never acknowledged such desires.²⁷⁶ Industry and political opponents, particularly within the USDA, made accusations of political grandstanding.²⁷⁷ The main charge was that Flemming provided little indication of the extent of the contamination, which the public assumed was universal without guidance to the contrary. The initial November 9th press release and several subsequent FDA press releases about the scare noted that both fresh and processed berries were suspect and that the buying public was unable to determine whether they were contaminated.²⁷⁸ Widespread industry protests and numerous calls for Secretary Flemming's resignation from both private individuals and the cranberry industry reached President Eisenhower's desk.²⁷⁹

Monday, November 9th, 1959, became known as "Black Monday" in the cranberry industry. The weeks following Secretary Flemming's announcement were the industry's lowest point in terms of financial loss and industry reputation. Government compensation and industry efforts at damage control helped save the industry as a whole, but damage had been done.²⁸⁰

The scare and the destabilization it caused began a process of industry restructuring that took more than a decade to run its course. Hundreds of small

²⁷⁵ "Cranberry Furor Evokes Grim Humor," *Houston Post*, Nov. 18, 1959, p.8; "Flemming Cranberry Alarm-Giver, Also Battled, Routed Diploma Mills," *Wichita Evening Eagle*, Nov. 24, 1959, p.4.

²⁷⁶ Oral history interview (OH-504), Arthur Flemming, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

²⁷⁷ "FDA Labs on Overtime Checking Cranberries," *Wisconsin Rapids Tribune*, Nov. 11, 1959, p.1.

²⁷⁸ Statement by Arthur S. Flemming, November 9, 1959 (Abilene, Kansas), 4.

²⁷⁹ Personal Correspondence, November 11, 1959 – November 27, 1959, Central Files, General file, Coffee, box 1149, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene, Kansas).

²⁸⁰ Thomas, *Cranberry Harvest: A History of Cranberry Growing in Massachusetts*, 162-3.

independent growers were wiped out. Some unusual or rare berry varieties ceased to exist on the market, replaced by more productive commercial varieties. Large growers, who could better weather the financial storm, took the opportunity to acquire prime bog acreage cheaply, which increased the market strength of the major cooperatives over independent farmers. This shift continued the trend of increasing production by a decreasing number of producers with larger individual acreages.²⁸¹

The cranberry scare of 1959 fit the definition of a “scare” as a widespread societal disturbance based on fears rather than immediate dangers. During a scare, people’s fears and reactions are based on a lack of information or poor information rather than on a full understanding of the topic, and the events are often characterized by fears that continue long after the actual problem has been solved. Technology and science are common elements of a scare, as both subjects and facilitators.²⁸²

²⁸¹ Eck, *The American Cranberry*, 19.

²⁸² Lewis, Howard J., Robert Cooke, William Colglazier, Allan Mazur, Josephine Gladstone and Alan McGowan, "Mass Media News Coverage of Scientific and Technological Controversy: Edited Excerpts from a Symposium," *Science, Technology, & Human Values* 6, no. 36 (1981), 25-30.

CHAPTER VI

NATIONAL, REGIONAL AND OFFICIAL RESPONSES THROUGH NEWSPAPERS

This chapter analyzes the media response to the scare, as well as the responses and interactions of President Eisenhower's administration, Secretary Flemming and the FDA, and other political figures in comparison to the responses of the cranberry and chemical industries. The responses of political figures are important because they represent the perspectives of those forced to deal with the scare from leadership perspectives, rather than from positions of fear or loss of livelihood. The cranberry and chemical industry responses contrast strongly with the political responses.

Although a survey of newspapers and magazines is not directly indicative of the thoughts of 1959 Americans, it does provide some indication of how various geographic regions reacted to the scare.²⁸³ Ten newspapers were chosen based on their proximity to cranberry growing regions or as representatives of metropolitan centers in non-growing regions. Each was surveyed for articles relating to cranberries, cancer, science, and the FDA and Secretary Flemming between November 9, 1959 and January 1960. All of them demonstrated commonalities in reporting coverage involving well publicized events, which were widely distributed through the media and FDA press releases.

The month long debate over cranberries and aminotriazole in the media served to generate confusion and fear. The fear generated was likely more damaging to the cranberry industry than the facts themselves.²⁸⁴ The combination of reporter's scientific

²⁸³ Iain Wilkinson, "News Media Discourse and the State of Public Opinion on Risk," *Risk Management* 1, no. 4 (1999), 21-31.

²⁸⁴ Friedman, *Communicating Uncertainty: Media Coverage of New and Controversial Science*, 81-91, 122-23.

backgrounds, personal views, limited access to source material, and journalistic time constraints were all possible causal factors in the confusion. Very few instances of reporting covered both sides of the aminotriazole controversy. The media coverage of the scare generally confirmed this dichotomy between effective reporting and scientific analysis, and “scare journalism” was exactly what concerned the Eisenhower administration.²⁸⁵

Scientific data could be difficult for the media to present to the public in a way that effectively expressed uncertainty and risk when there were multiple interpretations of the same data. This was especially true regarding risk where the possibility of a negative outcome was very small. Aminotriazole contamination and testing fell into this category because of the contentious nature of the conclusions. The scientific fact that the danger was incredibly small did not reduce the anxious reactions to potential danger from chemical contamination.²⁸⁶

According to the coverage, the magnitude of the cranberry problem was apparent to the media. During the roughly seven-week span of the cranberry scare from November 9 through December, 1959, newspapers referred to events as the cranberry crisis, the cranberry war, the cranberry problem, the cranberry cancer scare, the great cranberry scare and many other variants. One Northwestern newspaper quoted a disgusted cranberry grower referring to the scare as “the great cranberry farce of

²⁸⁵ Untitled memorandum, January 31, 1959, Don Paarlberg Files, box 5, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

²⁸⁶ Lewis, "Mass Media News Coverage of Scientific and Technological Controversy: Edited Excerpts from a Symposium," 25-30.

1959.”²⁸⁷ Secretary Flemming referred to announcements, seizures, and procedures during the scare as “actions,” lending his statements a more official tone.²⁸⁸ Cranberry industry references typically used terms indicative of destructive, uncontrolled forces, such as “tornado” or “storm.”²⁸⁹

Variations in reporting depth and differences in presentation provide important indicators of access to different information or different perspectives and interests. Cranberry growing regions publicized strong support for the cranberry industry and supported the farmer with risk-minimizing analysis based on medical opinion and experience in the field, while non-growing regions supported both industry and FDA perspectives with coverage of aminotriazole test results and the facts of the law. Some variation in the volume of regional coverage existed, but both growing and non-growing regions responded to the events similarly, often citing the same sources.²⁹⁰

Media attempts to cover both sides of the issue may have resulted in more anxiety and a public desire to be safe rather than sorry. Using very limited source material, providing little historical context for a debate, and giving equal weight to scientists and non-scientists in reporting can generate uncertainty in the public.²⁹¹ The fact that the fear generated by the scare was not confined to one area of the U.S., and the media coverage was similar in both growing and non-growing regions, demonstrated

²⁸⁷ “Cranberry Farce,” Medford Mail Tribune, Nov. 13, 1959, p.1; “Just a Quiet Day in Cranberry War,” San Francisco Chronicle, Nov. 13, 1959, p.2; “Inside the Cranberry Crisis,” Denver Post, Nov. 15, 1959, p.25.

²⁸⁸ HEW press releases, November 10, 1959 through November 18, 1959, Cranberry Flap, box 188, Pre-Presidential papers of Richard M. Nixon, NARA Pacific Region (Laguna Niguel, California); Report, January 26, 1960 (Laguna Niguel, California), 1-12.

²⁸⁹ “Then the Tornado,” Ocean Spray Newsletter, Vol. 2, No. 12, (Wisconsin Rapids, Wisconsin), 6-8.

²⁹⁰ “Cranberry Ok Demanded in Time for Christmas,” Newark Evening News, Nov. 12, 1959, p.1; “Analyst in Cranberry Scare Discounts Danger to Humans,” Denver Post, Nov. 12, 1959, p.1.

²⁹¹ Friedman, *Communicating Uncertainty: Media Coverage of New and Controversial Science*, 23-39.

that proximity to growing regions had no effect on the spread of concern over cranberries.²⁹²

Table 5: Number of articles by topic, November through December 1959

Number of articles					
	Science	Politics/Delaney	Cancer	Industry	Total articles
New York Times	8	18	6	22	29
Newark Evening News	12	23	5	32	42
Wisconsin Rapids Tribune	13	25	8	24	32
Seattle Times	6	17	7	20	24
Growing-region percentage	31%	65%	20%	85%	127
Denver Post	5	15	4	10	17
Houston Post	4	13	5	9	16
San Francisco Chronicle	6	14	8	10	20
Wichita Evening Eagle	2	6	3	8	10
Non-growing region percentage	27%	76%	32%	59%	63
Overall percentage	29%	71%	26%	72%	190

²⁹³

Some regional differences in media coverage existed. As expected, growing regions dwelled on the state of the cranberry industry. References to the state of the cranberry industry during the scare occur in 85% of the growing-region articles as

²⁹² William R. Freudenburg and Susan K. Pastor, "Public Responses to Technological Risks: Toward a Sociological Perspective," *The Sociological Quarterly* 33, no. 3 (1992), 395-7.

²⁹³ Newspapers were broadly surveyed for references to cranberries, cranberry industry issues, cancer related discussion, and government activity regarding aminotriazole.

compared to only 59% in non-growing regions. Newspapers in growing regions also showed a strong association with the cranberry industry in preference to political discussion. Newspapers in non-growing regions discussed FDA and USDA perspectives 11% more and cancer issues 12% more than non-growing regions. Newspapers in growing and non-growing regions discussed scientific issues similarly, with an equal number of articles and comparable coverage of the scientific facts. The clearest difference in regional coverage of the scare is in overall coverage, with newspapers in growing regions offering twice as many articles as newspapers in growing regions (See Table 5).

All of the newspapers analyzed, regardless of their association with a cranberry growing region, initially reported that the suspected aminotriazole contamination was focused in Washington and Oregon, which produced only 10% of the 1958 and 1959 crops. At the time of Secretary Flemming's announcement, the FDA said it believed the contamination had not spread beyond that region, although other cranberry growing areas were being scrutinized, and that tests had not proved that aminotriazole caused cancer in humans.²⁹⁴ Neither of these facts appeared in the analyzed media reports. Flemming's warning, in response to an unscripted question, that housewives should not buy if they could not tell where the cranberries came from was, however, mentioned in all of the newspapers. Because there was almost no way for any individual to determine

²⁹⁴ Statement by Arthur S. Flemming, November 9, 1959 (Abilene, Kansas), 2.

the origin of specific berries, as with most produce and grain, that single statement did the most to set the scare in motion.²⁹⁵

Quotes from industry and government leaders often shaped subsequent commentary. Statements by George Olsson, president of Ocean Spray, and Ambrose Stevens, vice president and general manager of Ocean Spray that Flemming's "ill-informed and ill-advised" action could wipe out the industry were widely quoted.²⁹⁶ Associated with many of the statements by industry leaders was the fear of massive financial loss to the cranberry industry.²⁹⁷ Secretary Benson said Flemming could have protected the public without issuing a general warning by working with the cranberry industry cooperatives to segregate and eliminate the contaminated berries.²⁹⁸ Oregon's Governor Meyner said "hasty panic-button statements have sent the nation into a tailspin", and Vice President Nixon referred to the scare as hysteria.²⁹⁹

Accusations flew against Flemming in the first few days of the scare. Immediate calls for Flemming's dismissal were common both in the media and on the desks of prominent politicians, including Senator Kennedy and President Eisenhower. Most negative letters, largely written by cranberry farmers and processing executives, referred to Flemming's "precipitous" statements and damage to the industry, while a group of positive letters, written by private citizens, lauded Flemming for his defense of public

²⁹⁵ Eck, *The American Cranberry*, 40.

²⁹⁶ "U.S. Inspecting Cranberry Bogs," Newark Evening News, Nov. 11, 1959, p.1.

²⁹⁷ "Ag Dept. Will Join Cranberry Promotion Drive," Wisconsin Rapids Tribune, Nov. 21, 1959, p.1.

²⁹⁸ "Cranberry Threat---'If You Eat 7 1/2 Tons'," p. 1.

²⁹⁹ "Nixon Scores Hysteria," New York Times, Nov. 15, 1959, p. 44.

health.³⁰⁰ Claims of a lack of thorough investigation and scientific support from the FDA were the most common negative media comments.³⁰¹ Insistence on the harmlessness of aminotriazole to humans, based on the statements of FDA and American Cyanamid scientists, was an important thread in this attack.³⁰²

Secretary Flemming was aware of the potential consequences of the timing of his announcement and possible damage to the cranberry industry.³⁰³ Because of the specific timing of his announcement, allegations that Secretary Flemming chose it to hit the industry hardest were common. Newspapers in growing regions elaborated on the perception that Secretary Flemming might have intentionally chosen his timing to most effectively interrupt the industry's processing and distribution pattern and to get the most attention from the resulting chaos.³⁰⁴ Ocean Spray President Olssen asked the president to declare a disaster to get federal aid and suggested that Flemming, having made his first error in announcing the concern nationally, was seeking to justify his position by conducting a "witch hunt".³⁰⁵ Demands for state and federal investigation, as well as calls for Secretary Flemming's resignation should no threat to public health appear, came from both producers and private individuals, primarily in growing regions.³⁰⁶

³⁰⁰ Series of 72 letters, Agriculture folder: Cranberry Industry, box 660, John Fitzgerald Kennedy Pre-Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts); *Houston Post*, "Storm Boils Over Cranberry Alarm," p. 1, November 11, 1959.

³⁰¹ "FDA Labs on Overtime Checking Cranberries," *Wisconsin Rapids Tribune*, Nov. 11, 1959, p.11.

³⁰² "Cranberry Sales Curbed; U.S. Widens Taint Check," *New York Times*, Nov. 11, 1959, p.1.

³⁰³ Statement by Arthur S. Flemming, November 9, 1959 (Abilene, Kansas), 1-4.

³⁰⁴ "Here are the Facts to Date on the Great Cranberry Scare," *Wisconsin Rapids Tribune*, Nov. 16, 1959, p.4.

³⁰⁵ "Asks Disaster Aid on Cranberry Loss," *Newark Evening News*, Nov. 16, 1959, p.2.

³⁰⁶ "FDA Staff Investigators Report Here," *Wisconsin Rapids Tribune*, Nov.10, 1959, p.1.

Flemming insisted that he acted as soon as he was certain of the problem and able to legally respond.³⁰⁷

Newspaper stories concerning local and national reactions, including lists of stores taking cranberry products off shelves and restaurants taking them off menus, appeared immediately after the initial announcement. National chains and local stores were affected. In the interest of public safety, state agriculture departments often sent out recommendations to retailers to remove cranberry products from their shelves until they could assure their safety.³⁰⁸ On the very first day of the scare New York, California, Ohio, and Michigan banned berries pending testing, and store bans were spreading around the nation. Oregon Governor Mark Hatfield sent an angry telegram to Secretary Flemming but still removed cranberries from prison menus, fearing riots.³⁰⁹ The state health director of California advised residents to avoid all cranberry products because no one could be sure they were from uncontaminated areas. Nevada echoed the sentiment, where the state health director urged the removal of all cranberry products from shelves no matter their source. Although some stores continued to stock cranberry products, there was very little mention of them in the media to counter the reports of bans and removals.³¹⁰

Several days after the press conference, newspapers began reporting how several prominent political figures used cranberries for publicity. Vice President Nixon and

³⁰⁷ Report, January 26, 1960 (Laguna Niguel, California), 8-10.

³⁰⁸ "Berries Off Shelves of Big A&P Chain," Wisconsin Rapids Tribune, Nov. 11, 1959, p.1; "Berry Ban Growing," Newark Evening News, Nov. 10, 1959, p.1.

³⁰⁹ "Berries for Rocky," Newark Evening News, Nov. 15, 1959, p. 6.

³¹⁰ "Cranberry 'Taint' Brings Ban in S.F.," San Francisco Chronicle, Nov. 11, 1959, p.1.

Senator John Kennedy both traveled to cranberry-growing regions and publicly consumed cranberry products without concern. The media both lauded and undermined their confidence, one even referring to them as choking down and gulping the materials in their attempt to support the cause.³¹¹ New York Governor Nelson A. Rockefeller was also watched carefully for signs of cranberry consumption.³¹² A few journalists were savvy enough to note that most of the avid cranberry-supporting politicians were also candidates for the upcoming presidential election. Kennedy and Nixon were already in the national spotlight, and newspapers suggested they were using the situation for political advantage.³¹³

President Eisenhower's and Secretary Flemming's activities were watched by the media throughout the scare. The question of who would have cranberries for Thanksgiving or Christmas was a common editorial topic. Some reports were contradictory.³¹⁴ Secretary Flemming and Secretary Benson stated that they would serve cleared cranberries for the holidays. There was no confirmation that Flemming did.³¹⁵ President Eisenhower, however, did not serve cranberries on his holiday table, settling for applesauce on the White House menu.³¹⁶

Some quoted experts claimed aminotriazole was harmless, while others claimed it caused cancer. Some food chains removed cranberries from their shelves, while others did not. A confused response from the public was a certainty when confusing and

³¹¹ "Cranberries? Veep Eats Nothing Else!," Wisconsin Rapids Tribune, Nov. 13, 1959, p.1

³¹² "Cranberry Furor Evokes Grim Humor," p. 8.

³¹³ "Cranberries? Veep Eats Nothing Else," p. 1.

³¹⁴ "White House Turkey," New York Times, Nov. 20, 1959, p.14.

³¹⁵ "Applesauce on Ike's Table," San Francisco Chronicle, Nov. 27, 1959, p.7.

³¹⁶ "Journey's Beginning," Time, Vol. 74, No. 23, Dec. 7, 1959, p. 19.

contradictory information came from all sides.³¹⁷ A November 14th *San Francisco Chronicle* article proclaimed “Plenty of Safe Cranberries Here” and assured readers the “Great Cranberry Scare” was over. The same article then includes a statement that FDA testing found two more contaminated Washington lots.³¹⁸ A *Denver Post* article about school menus noted that all would lack cranberries for Thanksgiving except one, which managed to trace its berries back to the cannery. Some schools opted to keep berries off the menus, cleared or not, because of potential parental reaction. Another chose to use them, but only berries from last year’s crop.³¹⁹

Early in the scare, newspapers presented reactions about the scare from housewives and other members of the concerned public. Although intended to be informative, the articles presented a confusing mix of lack of concern and reactionary fear.³²⁰ Comments from people not associated with cranberries typically revolved around their level of fear about cancer, whereas cranberry growers were sources of statements concerning their economic losses. Cranberry growers were often quoted using terms of woe and consternation, such as “We’ve been crucified” and “I haven’t slept for days.”³²¹

Throughout the scare, all newspapers reported seizure actions by the FDA. Seizures of berries from both of the other growing regions which tested positive for aminotriazole followed the initial seizures in Washington and Oregon. Consistent denials

³¹⁷ “A Nation Without Cranberry Sauce,” *San Francisco Chronicle*, Nov. 11, 1959, p. 40; “Flemming has Berries; Ike Eats Applesauce,” *Wisconsin Rapids Tribune*, Nov. 27, 1959, p. 1.

³¹⁸ “Plenty of Safe Cranberries Here,” *San Francisco Chronicle*, Nov. 14, 1959, p. 1.

³¹⁹ “Cranberries Sidetracked at Schools,” *Denver Post*, Nov. 20, 1959, p. 19.

³²⁰ “It’ll Be Turkey AND Cranberries,” *Newark Evening News*, Nov. 12, 1959, p. 22.

³²¹ Malcom Bauer, “Bog Owners Confused by Federal Orders,” *Oregonian*, Nov. 14, 1959, p. 1.

of aminotriazole's use in some areas, followed by seizures of lots from those areas, made the industry seem unaware of its own activities despite the industry's organized attempts to control and document all uses of aminotriazole on bogs. Ocean Spray and the processing industry countered by suggesting that berries processed in one area were often from a completely different growing region.³²²

The media noted many alternatives to cranberries. Throughout the scare, media provided recipes, including Swedish lignonberries, sauerkraut, spiced pears and plums, and applesauce, that could serve as alternatives for cranberry sauce. New York delicatessens took the opportunity to press their less traditional wares, such as imported sauces and pickled fruit from Europe.³²³ Restaurants in New York and Houston offered alternative dishes and advertised the lack of cranberries on their menus. Grocery store advertisements featured "approved" relishes.³²⁴ Unfortunately, because of a dry year, lignonberries were not available from Europe in sufficient quantities to overcome the cranberry sauce shortfall.³²⁵

One major regional difference in media response appeared as Thanksgiving approached. The newspapers from the three growing regions reported the extremely bleak nature of the scare for the cranberry industry and shifted their reporting to Christmas hopes, reflecting the hopes of the industry. Non-growing regions continued reporting nationwide seizures, clearings and analyses through Christmas, painting a

³²² "1958 Shipment from N.J. Tainted," Newark Evening News, Nov. 18, 1959, p. 9.

³²³ "Cranberry 'Ersatz'," Newark Evening News, Nov. 10, 1959, p. 19.

³²⁴ Edson, Arthur, "Only Danger Left on Cranberries, It Seems, Is Risk of Sticky Stains," Houston Post, Nov. 26, 1959, p. 21.

³²⁵ "Lignonberries Scarce," New York Times, Nov. 12, 1959, p. 21.

depressing picture for the industry. Growing regions only noted seizures in their areas and stopped reporting bad news, taking a much more hopeful stance.³²⁶

Newspapers in growing regions did the best job of presenting the cranberry industry's plight, the scientific basis of the scare, and the various events as they unfolded. Newspapers in both growing and non-growing regions offered detailed explanations of the aminotriazole situation, including substantial scientific detail and discussion of the Delaney ban.³²⁷

The *San Francisco Chronicle* focused on the scientific perspectives. Dwelling on November press conference statements by Dr. Boyd Shafter, toxicologist for American Cyanamid, the article noted that the tests indicating that aminotriazole causes cancer were not applicable to humans. Shafter had stated that Secretary Flemming was correct to issue the warning under the current legislation, but that he overstated concerns over the toxicity of aminotriazole.³²⁸ A follow-up article supported Secretary Flemming and Commissioner Larrick and provided a good scientific analysis, stating that thyroid activity can be slowed by several naturally occurring chemicals, as well as several other chemicals currently allowed by the FDA.³²⁹

Non-growing regions tended to take a more pro-FDA approach to their media coverage. A *New York Times* article reported that mail to the FDA and HEW from the public supported Flemming's actions seven to one. One anonymous writer even

³²⁶ "Industry to Spend More Promoting Cranberries," p. 7.

³²⁷ "FDA Cracked Down on Cranberries Under Special 1958 Authority," *Wisconsin Rapids Tribune*, Nov. 12, 1959, p. 12.

³²⁸ "Cranberry Threat---'If You Eat 7 1/2 Tons'," p. 1.

³²⁹ "Plenty of Safe Cranberries Here," p. 1.

proposed that the cranberry affair be “blown up” or exposed in the media in similar fashion to the TV quiz show scandals, so that the intent of the FDA to protect the public could be more widely realized.³³⁰ A *Wichita Evening Eagle* article lauded Secretary Flemming for his courage in standing up to industry and other governmental agencies despite the damage his announcement was likely to do.³³¹ A *Denver Post* editorial suggested that the cranberry alarm protected the public from a serious threat. It provided a balanced analysis of why the FDA did what it did and strongly criticized Secretary Benson for suggesting that he could have delayed the announcement until after Thanksgiving.³³²

Newspapers and television helped generate the conditions for public hysteria and supported fears of poisoning and cancer. Many newspaper articles may have contributed to the hysteria by continuing to report negative or confusing results, referring to the situation as “dangerous,” or mentioning each new ban or seizure. Their attempts to accurately report a complex, chaotic situation generated more chaos.³³³ Continued advice to the public from state and federal sources to wait for cleared lots fueled the panic and extended the scare through Christmas.³³⁴

³³⁰ , “Mail on Cranberry Controversy Said to Support Flemming, 7-1,” *New York Times*, Nov. 22, 1959, p. 74.

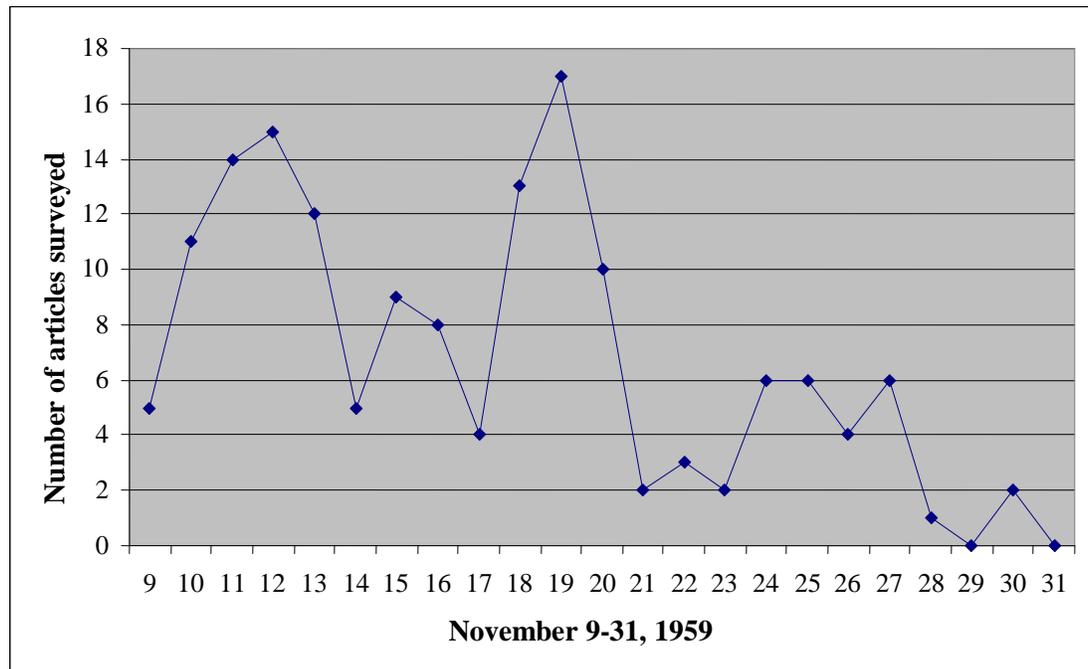
³³¹ “Flemming, Cranberry Alarm-Giver, Also Battled, Routed Diploma Mills,” p. 4.

³³² “Inside the Cranberry Crisis,” p. 25.

³³³ “Cranberries Labeled and Tested Pure are Approved for Sale,” *Wisconsin Rapids Tribune*, Nov. 19, 1959, p. 1.

³³⁴ “Just A Quiet Day in Cranberry War,” p. 2.

Figure 3: Combined number of cranberry scare articles, November 1959



Substantial spikes in the number of newspaper articles around November 11-12 and November 19 showed increased media interest. The spikes corresponded to the initial scare reaction and the coverage surrounding the cranberry industry's plan to separate and label cleared berries. Coverage then dropped leaving minimal coverage by the first week of December 1959. (See Figure 3) The final financial resolution to the scare in May 1960 went unmentioned in most newspapers, allowing the scare to simply disappear from reporting.

It is interesting to note not only what newspapers said, but what they did not say. The media gave little attention to or completely ignored several important factors critical to the scare. As expected, regional newspapers tended to choose the facts most relevant to their perspectives and the interests of their readers, but none told the whole story as

laid out by Secretary Flemming in his initial press release. The initial four page press release went into considerable detail on the FDA's motivations and the background for its actions. It left no doubt concerning the FDA's perspective and its reasoning based on law. Failure to report all of the supporting elements made it sound as if the FDA was being arbitrary in its pronouncements or blindly single-minded in its pursuit of aminotriazole, neither of which was the case.³³⁵

Given the close association of the FDA's activities during the scare to protection of the public from cancer, it seems there would have been substantive discussion of cancer. However, few of the surveyed sources delved into the current understanding of cancer. The American public was extremely concerned with anything relating to this mysterious ailment, which was the second leading cause of death in the United States in 1959. Discussion of cancer as a potential result of aminotriazole contamination or the current state of medicine regarding cancer was almost completely left out of cranberry scare commentary. Although further discussion of cancer might have added to the public's fears, it could also have soothed many minds in conjunction with scientific facts about the minimal risks involved with aminotriazole exposure.³³⁶

Lastly, the Delaney clause itself was underreported. As the primary authority supporting the FDA's actions during the scare and as legislation intended to protect the public from harm, it seems that the Delaney clause would have been a main topic of discussion. Although most of the surveyed sources mentioned that the Delaney clause

³³⁵ Statement by Arthur S. Flemming, November 9, 1959 (Abilene, Kansas), 1-4.

³³⁶ Freudenburg and Pastor, "Public Responses to Technological Risks: Toward a Sociological Perspective," 403-4.

banned cancer-causing substances in food and that it was the source of the FDA action, very few reported exactly what the clause meant or on the medical and testing science that gave it support. The November 9th press release explained the clause well, and both the FDA and Ocean Spray offered further commentary in the following days.³³⁷ Without an understanding of the scientific background of the clause and its relevance to aminotriazole testing, the public had to assume that the FDA used the clause only to protect against imminently harmful threats.³³⁸

All of these elements might have helped the public better understand the issues and reduced the fear reaction. However, inclusion of extensive scientific, medical, and legal data could also have made the media reports tedious and uninteresting, resulting in more confusion.

Magazine coverage

A brief survey of nationally distributed periodicals was done to determine how broad the coverage of the cranberry scare had been. Periodicals that ran articles on the scare reported information similar to newspaper sources, although they condensed coverage. Weekly news serials, such as *Time* and *U.S. News and World Report*, featured small articles on the scare through early 1960. There were no articles on the topic in *Life*, *Good Housekeeping*, *Saturday Evening Post*, *Ladies Home Journal*, *Harper's*, or *New Yorker*. Either the cranberry scare was simply too short in duration to have any

³³⁷ Ocean Spray Newsletter, Vol. 2, No. 11, November 10, 1959 (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin), 1-4.

³³⁸ Lewis, "Mass Media News Coverage of Scientific and Technological Controversy: Edited Excerpts from a Symposium," 29.

meaningful impact on the monthlies, or it was not interesting to the editors of those magazines. Spreading sensational news might sell magazines, but it might also turn away some readers by association with unpleasant news. Some of the periodicals may also have required too much lead time before layout and publication, by which time the scare was no longer news.³³⁹ Most of the above magazines featured cranberry recipes and traditional photos of holiday feasting in their holiday issues, and none referenced alternatives or concerns over aminotriazole or cancer.

Political responses

More than a decade of concern over the issue of adulteration in foods and the potential public response preceded the political response to the scare. Public forums on the topic included the Chemicals in Food Products hearings in 1950-1951 and 1956, the Health Inquiry hearings in 1953, and several other hearings and legislative actions on chemicals and their management.³⁴⁰

Before 1959, the White House, FDA, and USDA were already concerned with potential problems about revelations of chemical contamination in the media. White House staff members were concerned with the potential for scare journalism and negative public reaction, and were discussing ways to deal with problems when they occurred. However, there was no evidence that preparations went beyond the planning stage before Secretary Flemming's November 9 press conference. The majority of the

³³⁹ Ibid, 25-27.

³⁴⁰ Blank, "The Delaney Clause: Technical Naïveté and Scientific Advocacy in the Formulation of Public Health Policies," 1111-6.

pre-scare discussions centered on DDT in milk and diethylstilbesterol hormone residues in poultry, both of which the FDA later banned under the Delaney clause.³⁴¹

A confidential memorandum in January 1959 laid out several key concerns about the “residue problem” and includes two points that closely mirrored events during the cranberry scare 8 months later. Point 3: “widespread disregard by users of the manufacturer’s instructions for the use of these materials, which contributes importantly to the residue problem”, and point 6: “The risk of disruption of agriculture and the food industries if the recognized health hazard gets blown out of proportion by ‘scare journalism’ before sound answers from all points of view can be found”. Point 3 was the ultimate cause of the FDA’s actions in November 1959, and point 6 was the result of those actions.³⁴²

The memo included by six pages of detailed discussion concerning residues of the insecticide DDT in meat and milk. The discussion covered all of the major problems encountered later in the cranberry scare, including dependence on the problem chemical, ill-advised use of the chemical, and testing for extremely small residues. The jurisdiction overlap between the USDA and FDA when they disagreed on such problems was also a point of concern. The document did not suggest any immediate courses of action other than that the meat industry has “to live on pins and needles for the time being.” The other points in the list represented pesticide residue concerns that did not become critical

³⁴¹ “Some Suggestions for Overcoming the Problem of Undesirable residues in Agricultural Products, Especially Meat and Milk”, September 24, 1958, Don Paarlberg Files, box 5, Dwight D. Eisenhower Presidential Papers(Dwight D. Eisenhower Library, Abilene Kansas), 2.

³⁴² Confidential memorandum, January 31, 1959, Don Paarlberg Files, box 5, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1.

themes during the cranberry scare, such as the dependence of agriculture on chemicals and the research and development time required to find alternative chemicals.³⁴³

A follow-up memo to Don Paarlberg, Agricultural Economics Advisor to the Secretary of Agriculture, discussed the developing problem of undesirable residues in agricultural products. It mentioned the critical importance of chemicals in modern agriculture and cited increasing difficulty in avoiding residues. It also suggested that finding ways to completely avoid residues would have involved a great deal more funding as well as substantial time. The USDA had already made some advances in developing effective chemicals that left little or no residues, but progress was slow.³⁴⁴

In another memo from John Harvey, Deputy HEW Commissioner, one month before the scare, Harvey responded to a request from Paarlberg that all agencies involved in the regulation of chemicals and food prepare a press statement “in case a major public concern develops about the safety of foods that contain residues of pesticide chemicals.” The attached FDA statement was similar to parts of Secretary Flemming’s November 9 press release, especially the sections discussing residue tolerances, the Food Additive Amendment provisions, and assurances of the safety of the food supply.³⁴⁵

Although the President Eisenhower was aware of the cranberry problem and attended meetings to discuss departmental disagreements between USDA and FDA, he

³⁴³ Ibid, 2-7.

³⁴⁴ “Some Suggestions for Overcoming the Problem of Undesirable residues in Agricultural Products, Especially Meat and Milk”, September 24, 1958, Don Paarlberg Files, box 5, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1-4.

³⁴⁵ “Safety of the American Food Supply”, October 6, 1959, Central files, General Files, box 1148, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1-2.

avoided direct involvement. The President called Secretary Flemming on November 14 to ask him to assemble a panel of doctors to professionally advise on the cancer situation and to keep his staff informed.³⁴⁶ In a 1988 interview, Secretary Flemming noted that he experienced no significant pressure from the White House to take any particular course during the scare.³⁴⁷ However, the concern and fear drew President Eisenhower's attention, and he felt caught in the middle of a bureaucratic tangle between the USDA and the FDA. George Kistiakowski, the President's Special Assistant for Science and Technology from 1957-61, was explicitly told to handle the matter when the president became frustrated at being "pushed from two sides." Kistiakowski led the efforts to coordinate White House policy with USDA and HEW. He met with all of the groups involved, provided the expertise of the Science Advisory Committee, and kept the President informed of developments.³⁴⁸

As a result of the lack of communication and liaison between the HEW and USDA during the scare, the White House created a committee, headed by Dr. Kistiakowski, to improve communications between the government and food industry as well as between government departments.³⁴⁹ Although informal connections already existed between the HEW and USDA to share technical information about chemicals,

³⁴⁶ Untitled memorandum, November 14, 1959, Central files, General Files, box 1148, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

³⁴⁷ Oral history interview (OH-504), Arthur Flemming, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

³⁴⁸ Oral history interview (OH-412), George Kistiakowski, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

³⁴⁹ Letters from Ocean Spray, February 17 and 23, 1960, Robert E. Merriam Papers, Records 1956-1961, box 5, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

pests, and human nutrition, the scare and the increasing complexity of chemical concerns created interest in developing more formal relationships.³⁵⁰

Vice President Nixon and Senator John Kennedy (D-Mass) both played supportive roles during the cranberry scare, and generally placed their support with the cranberry industry. A question that appeared repeatedly in the media, concerned whether their actions expressed support for the industry and public health or indicated shrewd political maneuvering. Both men knew voters concerned about chemicals in food could potentially sway the upcoming presidential elections.

Both Nixon and Kennedy were well informed during the scare and had copies of Secretary Flemming's original press release in their files. Both men received letters from cranberry farmers and industry officials that referred to Flemming's statements as needless, drastic, ill-timed, poorly considered, inaccurate, and many other less complimentary terms. As a senator from the most productive cranberry state, Kennedy's papers focused on the industry, the needs of farmers, and seeking legislative and financial resolution to the crisis.³⁵¹

Nixon participated in several staff and cabinet meetings about the scare. Nixon also stated to the press that the public hysteria was unwarranted.³⁵² Nixon's files, titled "Cranberry Flap", contained a wide variety of information on the scare, including

³⁵⁰ Communication between Health, Education, and Welfare and Department of Agriculture, March 29, 1960, Central Files, Official File, box 542, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

³⁵¹ General communication, December 18, 1959 through January 14, 1960, Cranberry Industry Folder, box 732, John Fitzgerald Kennedy Pre-Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts); General Correspondence, December 2, 1959 through February 15, 1960, Cranberry Flap, Box 188, Pre-Presidential papers of Richard M. Nixon, NARA Pacific Region (Laguna Niguel, California).

³⁵² "Nixon Scores Hysteria," p. 44.

articles, a series of official HEW press releases through 1960, the transcript of the November 18th meeting of Secretary Flemming and Commissioner Larrick with representatives of the cranberry industry, and the subsequent press release on November 19. Nixon received dozens of letters expressing concern after he ate cranberries in Wisconsin on November 10. His formal response to those concerns noted that the event coordinators did not know at the time whether the berries were tainted. Several citizens condemned him for political posturing at the expense of the cranberry industry. In letters responding to concerns over his health, Nixon said that distortions of Secretary Flemming's statements by the press had fueled the hysteria.³⁵³

Senator Kennedy, a likely candidate in the upcoming presidential election competing with an incumbent Vice President, had a similar desire to win public support and show his interest in protecting the public health. Kennedy supported the cranberry industry in his home state. His participation in cranberry-related events gave him widespread publicity and drew praise from the public in all of the growing regions, especially in his home state of Massachusetts. Kennedy appealed to the USDA and Congress for administrative aid for the stricken cranberry industry during the scare.³⁵⁴

Kennedy maintained files, titled "Cranberry Industry", containing a series of letters about potential legislation and aid from both state and federal sources, as well as notes thanking Kennedy for his words and help during the crisis. One letter from Chester E. Cross, Head of the University of Massachusetts Cranberry Experiment Station,

³⁵³ Personal communications, November 11 through November 26, 1959, Cranberry Flap, box 188, Pre-Presidential papers of Richard M. Nixon, NARA Pacific Region (Laguna Niguel, California).

³⁵⁴ Personal communications, December 18, 1959 through June 13, 1960, Cranberry Industry 11/18/59-3/30/61, box 732, John Fitzgerald Kennedy Pre-Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts).

accused the FDA of focusing tests on known contaminated crops and thanked Kennedy for supporting the cranberry industry against “arbitrary” and “outrageous” government action.³⁵⁵ Kennedy was very well informed about both the background of aminotriazole as well as on communication between the USDA and HEW. He communicated directly with George Olsson of Ocean Spray, scientists and academics, and officials at American Cyanamid, as well as Secretary Flemming.³⁵⁶

More important than the political appearances and public attention, the effects of the cranberry scare dovetailed perfectly with existing efforts to amend the Agriculture Marketing Agreement Act of 1937. Both federal and state marketing orders were designed to give cranberry growers and cooperatives more ability to control the market for their products and to help prevent price fluctuations and speculation that might hurt the industry. As early as 1956, Senator Kennedy had led efforts to pass a Massachusetts state marketing order to deal with increasing volumes of frozen berries, and he was one of the primary proponents of a national cranberry marketing order.³⁵⁷ The cranberry growers and cooperatives consistently supported the legislation because price supports and government control would help prevent fluctuations in price. Processors and distributors resisted because the same supports and controls would remove some of the market competition that allowed them to speculate and profit from the farmers and

³⁵⁵ Letter from Chester E. Cross, December 18, 1959, box 732, John Fitzgerald Kennedy Pre-Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts), 1-2.

³⁵⁶ Personal communications, November 10, 1959 through , December 31, 1959, boxes 628 and 732, John Fitzgerald Kennedy Pre-Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts).

³⁵⁷ United States. Congress. Senate. Agriculture and Forestry Committee., *Cranberry Marketing Orders, Hearing before a Subcommittee Of ..., 85-1 on S. 1680 ..., April 29, 1957.* 1-4.

cooperatives.³⁵⁸ The events of the cranberry scare and their damaging effects on all segments of the industry reduced resistance and permitted passage of the amendment to allow marketing orders for cranberries. President Kennedy's support from the White House was invaluable in the passage of the Agricultural Enabling Amendments Act on August 8, 1961.³⁵⁹

Many state departments of agriculture and health immediately disseminated information and tested cranberries in their regions. Cranberry growing states were more involved in the testing process than non-cranberry growing regions.³⁶⁰ Washington, as a growing region and one of the states implicated in the initial scare seizures, was very active. Governor Albert Rosellini took a stance immediately after the November 9 press release, requesting action from his Congressional representatives to protect the growers in his state and to find out what happened.³⁶¹ Joe Dwyer, Director of the Washington State Department of Agriculture, wrote to Governor Rosellini that a full investigation would be necessary to restore public confidence in the food supply. He also noted that neither the FDA nor the USDA had issued warning to his department before Flemming's announcement. He suggested that had his department sufficient time, it could have avoided emergency testing costs and even developed a plan to avoid the scare.³⁶²

³⁵⁸ Communications concerning marketing orders, January 27, 1956 through May 4, 1956, Agriculture Folder, box 660, John Fitzgerald Kennedy Pre-Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts).

³⁵⁹ Agricultural Marketing Agreement Act, U.S. Code 7 (1937) §§ 601-674.

³⁶⁰ New Jersey. Dept. of Agriculture., *Annual Report of the New Jersey State Department of Agriculture* (Trenton, N.J., 1960), 11, 33.

³⁶¹ Telegram to Senator Warren G. Magnuson, November 11, 1959, Papers of Governor Albert D. Rosellini, Archives of the State of Washington, Olympia.

³⁶² Report to Governor Rosellini from Joe Dwyer, December 24, 1959, Papers of Governor Albert D. Rosellini, Archives of the State of Washington, Olympia, 4.

In a telegram to Senator Warren Magnusson (D-Wash), Chairman of the Senate Committee on Interstate and Foreign Commerce, Governor Rosellini emphasized the need for better communication between the USDA and HEW, as well as between the federal organizations and state departments of health.³⁶³ He noted in a press release on November 23rd that the consumer could buy labeled products with confidence. Unfortunately, on November 24th he reported that, although labeling was no longer necessary for processed cranberry products, fresh berries were still suspect and that consumers should purchase only labeled products, both canned and fresh, undermining his previous statement of confidence.³⁶⁴ Congressman Jamie Whitten (D-Miss), Chairman of the Appropriations Subcommittee for Agriculture, suggested that the whole cranberry affair was a political appeal by the “overzealous and politically ambitious” to the 88% non-farmer percentage of the American voting public.³⁶⁵

Secretary Flemming and the scare

The perspectives of the FDA and Secretary Flemming were clear and consistent throughout the scare. The Delaney clause stated that cancer-causing materials must not be components of food, no matter their source or concentration. The FDA determined that aminotriazole caused cancer in laboratory animals and had been found on some cranberry crops. It was the responsibility of the FDA to protect public health by

³⁶³ Department of Agriculture News Releases, November 11, 1959, Papers of Governor Albert D. Rosellini, Archives of the State of Washington, Olympia.

³⁶⁴ Department of Agriculture News Releases, November 23 and November 24, 1959, Papers of Governor Albert D. Rosellini, Archives of the State of Washington, Olympia.

³⁶⁵ “Chemicals and the Food Supply, Presented at the 27th Annual Meeting of the National Agriculture Chemicals Association”, September 27, 1960 (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin), 14-28.

preventing contaminated products from reaching the consumer, and Secretary Flemming was following the letter of the law.

A pivotal question was whether concern for the public was Secretary Flemming's primary motivation, or whether there was more to the story. As the Secretary of HEW, battling adulteration of foods was one of Flemming's primary duties. During the scare, some newspapers portrayed Secretary Flemming as a hero who saved the public from cancer.³⁶⁶ This effect had the potential to boost his political career. However, at least one Wisconsin reporter suggested that his "vicious attack" on the cranberry industry was part of a plan to punish the industry and gain from the publicity.³⁶⁷ His actions during the cranberry scare were intended to affect both the industry and the public, although the scale of the impact was underestimated. Secretary Flemming denied any intentional desire to harm the cranberry industry or to reap political benefits from the controversy, stating that he had very little time to actually prepare his statements.³⁶⁸ The 1960 HEW Annual Report suggested that the FDA's timing of the November 9 announcement was based on the development of a method to detect aminotriazole residues, which was made available in October 1959.³⁶⁹ The timing just before harvest,

³⁶⁶ "Then the Tornado", Ocean Spray Newsletter, Vol. 2, No. 12, (Wisconsin Rapids, Wisconsin), 4; "Flemming, Cranberry Alarm-Giver, Also Battled, Routed Diploma Mills," p. 4.

³⁶⁷ "Cranberry Scare Brings Protests; Wisconsin Crop is Called Safe," Wisconsin Rapids Tribune, Nov. 10, 1959, p. 1.

³⁶⁸ Oral history interview (OH-504), Arthur Flemming, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

³⁶⁹ United States. Dept. of Health Education and Welfare., *Report to the Secretary of Health, Education, and Welfare Concerning the Food and Drug Administration* (Washington D.C., 1960), 232-39.

Flemming's refusal to negotiate with the industry, and his foreknowledge of the possible consequences caused some members of the cranberry community to doubt that claim.³⁷⁰

Some criticisms of Secretary Flemming claimed he was under-qualified for his post.³⁷¹ Flemming had taken his HEW post in 1958 after several previous postings, including the U.S. Civil Service Commission from 1939-1948 under President Franklin D. Roosevelt, the Hoover Commission (as Civil Service Commissioner) in 1947 under President Harry S. Truman, Assistant Director of the Office of Defense Mobilization from 1951-1953 under Truman, and Director of the Office of Defense Mobilization from 1954-1957 under Eisenhower. As Secretary of HEW, he interacted frequently with the media, especially television and radio, in distributing official information, and the scare was no exception. His well-prepared bi-monthly press conferences were well attended by the media, giving Secretary Flemming ample opportunity to use publicity and the media to achieve his institutional goals. His frequent press conferences were a major change from his predecessors, who met with the press only when necessary.³⁷²

A *Wichita Evening Eagle* article suggested that the public response might have been more extreme than Secretary Flemming expected. Secretary Flemming was criticized for his failure to foresee the consequences of his announcements, and cranberry industry officials accused him in the media of making the situation worse in

³⁷⁰ Lipman and Ocean Spray Cranberries Inc., *Labor of Love: My Life's Work with Cranberries and Ocean Spray*, 109-15.

³⁷¹ "Cranberry Scare Brings Protests; Wisconsin Crop is Called Safe," p. 1.

³⁷² "Flemming Cranberry Alarm-Giver, Also Battled, Routed Diploma Mills," p. 4.

his attempts to justify the action.³⁷³ Unfortunately, retracting the initial statement was both impossible and unlikely to help once the fears of the public were aroused.³⁷⁴

Injunctions, seizures, and adverse publicity were the three main tools available to the FDA in dealing with adulterated foods when warnings and non-punitive measures had failed.³⁷⁵ Secretary Flemming's tools of choice in November of 1959 were seizure and adverse publicity.³⁷⁶ Injunctions proved unnecessary, as the cranberry industry cooperated with the administration fully from the beginning in 1957. Seizures of both tainted and untainted berries in 1957 resulted in the destruction of several million pounds of fruit. Continued seizures throughout 1959 accompanied by press releases and progress reports, kept the topic in the media and the public's eye.³⁷⁷

Publicity can be powerful, and there is a long history of government using it to advantage.³⁷⁸ The use of adverse publicity by the FDA and the HEW to pressure the cranberry and chemical industries was a central theme in the cranberry scare. Educational programs and large-scale seizures in 1957 had failed to stop improper use of aminotriazole. Secretary Flemming considered the publicity necessary to protect the public despite the possible consequences to the industry. He refused attempts by Ocean Spray officials to arbitrate the situation in private before the press conference, and he did not allow Secretary Benson access to the press release until the conference had begun

³⁷³ "Berry Industry Fighting Back," *Wichita Evening Eagle*, Nov. 18, 1959, p. 1.

³⁷⁴ Freudenburg and Pastor, "Public Responses to Technological Risks: Toward a Sociological Perspective," 395-7.

³⁷⁵ Statement by Arthur S. Flemming, November 9, 1959 (Abilene, Kansas), 1-4.

³⁷⁶ Blank, "The Delaney Clause: Technical Naïveté and Scientific Advocacy in the Formulation of Public Health Policies," 1086-89.

³⁷⁷ Report, January 26, 1960 (Laguna Niguel, California), 2-12.

³⁷⁸ Ernest Gellhorn, "Adverse Publicity by Administrative Agencies," *Harvard Law Review* 86, no. 8 (1973): 1407-09.

because Flemming had not approved the content until just beforehand.³⁷⁹ The timing of the publicity was intended to not only warn the public of what the FDA considered a potential danger to public health, but also to force stricter compliance by the cranberry industry with the Food and Drug Act and Delaney clause.³⁸⁰

The question raised by the cranberry industry most often in 1959 was the necessity of the publicity. The industry had made several efforts to work with the FDA and to curtail improper use of aminotriazole. Offers were on the table to continue destroying large portions of the annual crop until the two sides solved the problem. Secretary Flemming's urgency was based in past failures to solve the aminotriazole residue problem, and protection of the public from uncertain danger, as well as the letter of the law.³⁸¹ Secretary Flemming did not trust that the tainted berries would not find their way to market, and the law obligated him to prevent such contamination of the food supply. Cranberry and chemical industry concerns were secondary to protection of the public health.³⁸²

Some sources took a less critical view of Secretary Flemming and his actions. A November 24th *Wichita Evening Eagle* article, focusing on Secretary Flemming, was titled "Cranberry Courage." The media styled Secretary Flemming as a "realistic," "hard minded," "cranberry alarm-giver". The article supports Flemming for standing firm in

³⁷⁹ "Memorandum for the Record Re: Cranberries", November 12, 1959 through November 17, 1959, Staff Research Group, Records 1956-1961, Box 10, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas); "Then the Tornado", *Ocean Spray Newsletter*, Vol. 2, No. 12, (Wisconsin Rapids, Wisconsin), 3.

³⁸⁰ Gellhorn, "Adverse Publicity by Administrative Agencies," 1407-10.

³⁸¹ HEW press releases, November 9 and November 10, 1959, General Correspondence, Cranberry Flap, Box 187, Pre-Presidential papers of Richard M. Nixon, NARA Pacific Region (Laguna Niguel, California).

³⁸² Oral history interview (OH-412), George Kistiakowski, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

his protection of the public from harm despite the USDA's, the industry's and some segments of the public's attacks. The article also noted that he was simultaneously taking aim at diploma mills, championing fluoridation, and working on a medical pact with the Russians on cancer research, in addition to battling chemical adulteration of the food supply. He was characterized as a career administrator who had not yet reached the top of his career. The article also noted that secretary of HEW was a perfect post for building a public reputation because of the potential for visibility.³⁸³

Despite the industry accusations and media coverage, no evidence indicated that Secretary Flemming ever wavered in his intent during the scare. He was consistent in his support of the letter of the Delaney clause, and he pressed the issue to a conclusion that satisfied the law. His original press release from November 9th covered all the scientific bases, and it was clear and non-judgmental of the industry. Secretary Flemming's actions were both ethical and legal, even though he knew there might be serious repercussions for the industry.³⁸⁴ In a 1967 letter discussing the scare, he stated "If confronted with the same set of circumstances again I would act in a similar manner."³⁸⁵

The cranberry scare was the first test of the Delaney clause, as well as a demonstration of the need for such a procedure in defense of health. Although scientists did not agree on the technical necessity of the clause to defend against cancer, the public's response to the mention of cancer made it clear there was good reason to take

³⁸³ "Flemming Cranberry Alarm-Giver, Also Battled, Routed Diploma Mills," p. 4.

³⁸⁴ Oral history interview (OH-504), Arthur Flemming, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

³⁸⁵ Letter to Mr. George H. Kachele, February 13, 1967, Arthur S. Flemming, Papers 1939-1975, Box 5, Untitled memorandum, January 31, 1959, Central files, General Files, box 1148, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

action. The debate over whether the Delaney clause served a scientifically valid purpose continued for decades, but the media made it clear that the FDA's attempt to protect the public was appreciated.³⁸⁶ Other cancer scare announcements based on the Delaney clause followed the cranberry scare. They included announcements of residues of diethylstilbesterol in animals and animal products, coal tar dyes in cosmetics, and alar residues on apples. These actions were in direct response to the Delaney clause as well as the 1960 Color Additives Amendment, which also contained Delaney-like clauses.³⁸⁷

Industry responses

Initial responses from the cranberry industry to the November 9th announcement took the form of shock and outrage. The industry contended that Flemming's statements came with minimal warning, and without the opportunity to collaborate on a non-damaging settlement.³⁸⁸ There had been warnings of problems with aminotriazole, despite industry protestations of surprise. Cranberry and chemical industry documents from before the scare expressed grim expectation of problems resulting from the failure to set a tolerance on aminotriazole residues. Growers and processors feared the worst if aminotriazole was not registered with a residue tolerance.³⁸⁹ A detailed November 6

³⁸⁶ "A Nation Without Cranberry Sauce," San Francisco Chronicle, Nov. 11, 1959, p. 40.

³⁸⁷ "Memorandum for the Hon. George B. Kistiakowski", May 3, 1960, General Files, box 23, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

³⁸⁸ "Then the Tornado", Ocean Spray Newsletter, Vol. 2, No. 12, (Wisconsin Rapids, Wisconsin), 2-7; Letter from George Olsson of Ocean Spray, December 31, 1959, Cranberry Industry, Box 628, John Fitzgerald Kennedy Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts).

³⁸⁹ National Cranberry Association Special Letter to Membership, September 18, 1959 (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin).

press release from American Cyanamid showed that the chemical industry anticipated the potential problem with aminotriazole.³⁹⁰

The industry never claimed it did not understand why Secretary Flemming made the announcement. The main contention was that his action penalized the entire cranberry and chemical industries for the actions of a relatively few growers.³⁹¹ The cranberry industry was already working with the FDA and USDA to solve the problem, with a willingness to do what was necessary to solve it. Growers were warned not to use aminotriazole for any reason in September, 1959. Millions of pounds of suspect berries were already set aside for testing. The cranberry industry's perspective was that there simply was never a reason for a public announcement, and that the problem should have been handled internally. The FDA countered by pointing out that the September warning was too late to have protected the 1959 crop from misused aminotriazole. The 1959 cranberries could have been contaminated before the ban went into effect, requiring the announcement to protect the public from contaminated berries already on the market.³⁹² Nonetheless, contamination statistics from 1957 and 1959 showed that industry education efforts and the ban on aminotriazole might have been successful after all.

Throughout the scare, the chemical and cranberry industries consistently denied any potential harm to the public. They both presented substantial data indicating the

³⁹⁰ American Cyanamid Statement on Aminotriazole, November 6, 1959, Cranberries, Box 759, John Fitzgerald Kennedy Pre-Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts).

³⁹¹ Eanet and United States. Congress. House. Committee on Interstate and Foreign Commerce. Special Subcommittee on Legislative Oversight., *The Cranberry Problem. Study for the Special Subcommittee on Legislative Oversight of the Committee on Interstate and Foreign Commerce, House of Representatives, Eighty-Sixth Congress, First Session*, 4-6.

³⁹² Proceedings, November 18, 1959 (Laguna Niguel, California), 46-48.

unsoundness of the scientific basis for considering aminotriazole carcinogenic. Although their scientific point of view was well supported by research and professional opinion, conflict with the inflexible nature of the Delaney clause was a losing battle for scientific logic and reasoned analysis of chemical toxicity.³⁹³

The cranberry and chemical industries cooperated with the FDA and USDA without hesitation. From the beginnings of the crisis in the 1957 season through the scare, the presentation of the industry's labeling plan, nationwide testing, and eventual government compensation, the industries cooperated fully.³⁹⁴ After protests and negotiations failed, the only option was to work within FDA guidelines and to work with Secretary Flemming for the best result possible.

The events of the scare forced major changes in the cranberry production base almost overnight. The scare was particularly devastating financially. Cranberry producers were already dealing with several consecutive years of marginal profitability because of crop carryovers. The remainder of the held 1957 crop and an indeterminate percentage of the 1958 crop remained permanently unsold and wasted. Producers and processors had to push marketing and product development efforts faster than they planned.³⁹⁵ The industry embarked on a full marketing, advertising, and production campaign to use the ever-increasing volumes of berries more effectively by inspiring the

³⁹³ National Agricultural Chemicals Association press release, November 10, 1959, General Correspondence, Cranberry Flap, box 188, Pre-Presidential papers of Richard M. Nixon, NARA Pacific Region (Laguna Niguel, California), 1-2.

³⁹⁴ Report, January 26, 1960 (Laguna Niguel, California), 11.

³⁹⁵ "Sales of Fresh Fruit", Ocean Spray Newsletter, Vol. 2 No. 10, October 21, 1959 (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin), 1-2.

public to use them throughout the year.³⁹⁶ Examples of new products included dried sweetened cranberries, cranberry juice mixes, cranberry salsa, candied cranberries, and inclusion of cranberries in trail mixes.

The Market Research Corporation compared sales from November 8 through 28, 1959, to the same period in 1958. Sales of manufactured cranberry products fell 66% over the three-week span, and sales of fresh berries dropped an average of 73%. Hopes for Christmas sales did not materialize, and the “devastating losses” continued through the end of the year.³⁹⁷ Ocean Spray commissioned a one-time study to assess some of the effects of the scare on the cranberry market. “Trendex” survey data, reported on December 21, 1959, noted “permanent” damage to the industry and to public confidence in cranberries. Fifty one percent of respondents did not serve cranberries for their 1959 Thanksgiving dinners. Of that 51%, 91% had served cranberries in previous years. Of the 91% who previously served cranberries, 55% specifically mentioned the cancer scare as the reason they did not do so in 1959. Of the group that did not serve cranberries in 1959, 47% said they would never serve cranberries again, resulting in an apparent permanent 11% reduction in that market.³⁹⁸ Fortunately for the cranberry industry, this prediction of doom did not materialize. Sales in the 1960 and 1961 seasons were still down, but much closer to expected levels and increasing steadily.³⁹⁹ 1962 was

³⁹⁶ “Facts on Ocean Spray Cranberry Juice Cocktail”, August, 1960, Cranberry Collection, Research Materials (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin), 1-4.

³⁹⁷ “Then the Tornado”, Ocean Spray Newsletter, Vol. 2, No. 12, (Wisconsin Rapids, Wisconsin), 6.

³⁹⁸ *Ibid*, 6.

³⁹⁹ United States Crop Reporting Board., *Fruits, Non-Citrus, by States, 1959-64: Production, Use, Value*, 36, 78.

the first year in which a cranberry marketing order took effect, changing the pattern of distribution and sales drastically.⁴⁰⁰

One of the cranberry industry's major complaints was that the FDA provided no financial support to back up its testing requirements. The loss of crops was devastating enough without having to pay for expensive testing and long term storage of unsold crops as well. The industry needed more direct help to sell its product and to make room to store the 1960 crop. Federal loans became available for relief soon after the scare began, but more debt was not what the cranberry industry needed.⁴⁰¹ Federal purchase of excess fruit, an alternative to loans, quickly became the approach industry supporters favored.⁴⁰²

The primary solution was direct federal funding under "section 32" of the Agricultural Adjustment Act of 1935. The Secretary of Agriculture authorized the funds for encouraging the exportation of agricultural products, encouraging the domestic consumption of agricultural commodities and reestablishing farmer purchasing power by making payments on agricultural commodities. The Secretary had complete authority to define how and why his use of the funds fit the expenditure categories. Agricultural products purchased with section 32 funds were to be "donated for relief purposes" or to support summer camps for children.⁴⁰³

⁴⁰⁰ Farrimond, David. "Cranberry Marketing Order Volume Regulation", Cranberry Marketing Committee (1999), 1-5.

⁴⁰¹ "Cranberry Industry at Standstill with Marketing Prospects Bleak," Wisconsin Rapids Tribune, Nov. 28, 1959, p. 7; "Cranberry Labeling," Newark Evening News, Nov. 13, 1959, p. 1.

⁴⁰² "Tainted Cranberries Not Dangerous to Humans, Rat Chemist Maintains," Wichita Evening Eagle, Nov. 12, 1959, p. 11.

⁴⁰³ *Agricultural Marketing Agreement Act, U.S. Code* 7 (1937) § 612.

In February 1960, USDA Secretary Benson summarized the funding issue in a letter to General Wilton Persons, White House Chief of Staff. Benson acknowledged the authority to use section 32 funds but stated that such payments would require a major departure from existing policy and that there would be no way for the existing organizations to use the unsold berries. He expressed concern that invoking the “questionable provision” might result in a flood of similar requests from groups in distress, and he suggested that loans through the Commodity Credit Corporation would be a better choice.⁴⁰⁴

Senator Hastings Keith (R-Mass) discussed the price support idea in a letter summarizing a meeting with Gerald Morgan, Deputy Assistant to the President. Keith stated that “everyone agreed that a moral obligation exists to provide assistance to the growers.” During the meeting, Don Paarlberg, Agricultural Economics Advisor to the Secretary of Agriculture, confirmed that legal authority to act existed. Keith supported the use of section 32 funds to help the cranberry industry and to avoid the necessity of introducing special funding legislation which might have “disastrous results.” Keith was concerned that the longer the Eisenhower Administration waited to deal with the cranberry issue, the less sympathetic Congress would become, and the more political any action might appear.⁴⁰⁵

⁴⁰⁴ Letter to the Honorable Wilton B Persons from USDA Secretary Ezra Benson, February 3, 1960, Gerald D. Morgan Papers, Records 1953-1961, box 7, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

⁴⁰⁵ Letter to the Honorable Gerald D. Morgan from Hastings Keith, February 17, 1960, Gerald D. Morgan papers, Records 1953-1961, box 7, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

A similar letter from Senator Leverett Saltonstall (R-Mass) to Bryce Harlow, Deputy Assistant to the President for Congressional Affairs, encouraged use of the price support program to avoid the necessity of introducing new legislation to solve the problem. Saltonstall claimed that follow-up tests for aminotriazole done by the cranberry industry found no contamination, contradicting specific FDA findings. He suggested that that fact alone could cause the administration great difficulty.⁴⁰⁶ Senator Saltonstall also wrote to USDA Secretary Benson,

A very few growers, to whose action the Government reacted precipitously, have placed the entire industry in jeopardy. We must continue to protect the public, as your Department has done so skillfully, from disease, but if all protection were rendered in the fashion in which it has been rendered on cranberries, I believe we could both visualize the public eating nothing but cereal, and worrying about that.⁴⁰⁷

Both Keith and Saltonstall considered the damage done to the cranberry industry through “precipitous action” of the government a serious political mistake, which providing relief to the cranberry industry would help alleviate. Another letter from Senator Keith to Gerald Morgan listed several advantages to providing relief, including “prevent giving political initiative and ammunition to our opposition”, “avoid providing a sounding board for attacks against Flemming, Benson, or the Administration”, “eliminate the possibility of a further rift between two executive departments” and “avoid the establishment of a legislative precedent.” The last point on the list was to “leave all of us in the best possible position with both the cranberry growers and the

⁴⁰⁶ Letter to Bryce Harlow from Senator Leverett Saltonstall, January 13, 1960, Bryce N. Harlow, Records 1953-1961, box 9, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1-2.

⁴⁰⁷ Letter to USDA Secretary Ezra Benson from Senator Leverett Saltonstall, January 13, 1960, Bryce N. Harlow, Records 1953-1961, box 9, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1-2.

public.”⁴⁰⁸ Pressure from people like Saltonstall and Keith helped persuade Secretary Benson to use section 32 funds to support the cranberry industry.

The Cranberry Payment Program, authorized on May 4, 1960, was not a price support program, but a buyout. Secretary of Agriculture Benson used section 32 funds to purchase unsold cranberries. Producers were required to submit a complex array of applications, supporting documents, and signatures from both farmers and cooperative managers to receive payments only for “wholesome and marketable” berries from the 1959 season, screened and free of aminotriazole contamination. The cranberry payment program paid \$8.02 per barrel, compared with an estimated market price of over \$12.00 per barrel had the scare not occurred.⁴⁰⁹ Although the solution was not unique, because the USDA had bought out small stocks of cranberries with section 32 funds in 1950 and 1954, it was certainly unusual in its scope. The combination of the 1950 and 1954 purchases cost \$2.5 million.⁴¹⁰ The 1959 buyout of 1.1 million barrels of cranberries, which were used for federal food programs, given to charities and used for cattle feed, cost an estimated \$9 million.⁴¹¹

The scare had minimal effect on the chemical industry during and after the scare. A general ban on aminotriazole issued by the FDA followed the scare, and the manufacturers removed the chemical from the market in 1961. Although the

⁴⁰⁸ Letter to the Honorable Gerald D. Morgan from Hastings Keith, January 21, 1960, Gerald D. Morgan papers, Records 1953-1961, box 7, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1-2.

⁴⁰⁹ “Cranberry Payment Program AMM 181a”, May 4, 1960, Cranberry Collection, Research Materials (Wisconsin State Cranberry Growers Association archives), 1-6; U.S. National Archives and Records Administration, “Cranberry Payment Program AMM181a,” Federal Register 25, no. 90 (May 7, 1960): 5689-5690.

⁴¹⁰ Proceedings, November 18, 1959 (Laguna Niguel, California), 81.

⁴¹¹ Gellhorn, "Adverse Publicity by Administrative Agencies," 1409.

manufacturers and distributors lost a source of revenue, the relative financial loss was minute and alternative chemicals emerged. The chemical industry was very involved in the political defense of chemicals and the cranberry industry. Amchem and American Cyanamid provided scientific statements concerning the aminotriazole toxicity studies and their relationship to human biology.⁴¹²

The combination of reports and responses from the media, the cranberry and chemical industries, and official sources created a complex web of information. Throughout the scare, the facts of the situation, the perspectives of the FDA and the cranberry industry, and the philosophy behind the relevant legislation were available to the press. The choices each source and group made in disseminating certain information shaped the course of the scare by influencing the public's perceptions. The public was concerned about the apparent threat and confused by inconsistent information from the media. Conflicting opinions and scientific interpretations from the cranberry industry and the FDA undermined public confidence. Fear was a natural result.⁴¹³

Press coverage over time and the response of the public provided evidence of the interest in and concern over the topic. Initial reactions were often characterized by shock and panicked reaction.⁴¹⁴ The passage through the processes of testing, labeling, and clearance of enough berries for Thanksgiving and Christmas was well covered in all

⁴¹² American Cyanamid Material Safety Data Sheet, November 6, 1959, Cranberries 11/6/59-11/17/59, box 759, John Fitzgerald Kennedy Pre-Presidential Papers (John Fitzgerald Kennedy Library, Boston, Massachusetts).

⁴¹³ Arnold and Sandlin, *Fear of Food: Environmentalist Scams, Media Mendacity, and the Law of Disparagement*, 1-13, 106-16.

⁴¹⁴ "Cape Cod Fears Cranberry Loss," *New York Times*, Nov. 12, 1959, p. 21; "Storm Boils Over Cranberry Alarm," *Houston Post*, Nov. 11, 1959, p. 1.

regions, but articles moved progressively farther from the front page.⁴¹⁵ By the end of the scare around Christmas 1959, most papers had ceased to report on the scare, and it did not make the majority of nationally distributed magazines in any detail.

The cranberry scare inspired prophetic thoughts concerning the shape of things to come. Dr. William Thompson, director of chemistry and chemical engineering at the Southwest Research Institute in San Antonio, Texas stated during the scare that the events of 1959 “may be just a small forerunner of many food bans and investigations.”⁴¹⁶ One forward-looking *Houston Post* article opined that there would definitely be more conflicts concerning rigid chemical laws and foresaw the pending color additives amendment as another source of future scares.⁴¹⁷

⁴¹⁵ “Tests Find Little Taint,” *New York Times*, Nov. 17, 1959, p. 21; “3 Cranberry Lots Seized,” *Newark Evening News*, Nov. 24, 1959, p. 7.

⁴¹⁶ “Sees Further Food Probes,” *Newark Evening News*, Nov. 18, 1959, p. 1.

⁴¹⁷ “Cancer Clause in Color Additives Bill Pending,” *Houston Post*, Nov. 30, 1959, p. 8.

CHAPTER VII

CONCLUSION - EPILOGUE

Once the words left Secretary Flemming's mouth, the events of the cranberry scare were set in motion. Whether he intended the storm it generated, the public was primed to react, and react it did. Despite its brief duration, the scare reshaped the cranberry industry in the short term as well as the long term, and it set the stage for similar events revolving around cancer and the Delaney clause.

Despite the partial preparedness of the Eisenhower administration and the many accusations cast at Secretary Flemming, the blame ultimately rested with the cranberry farmers.⁴¹⁸ A Special Subcommittee on Legislative Oversight of the House Committee on Interstate and Foreign Commerce looked into the scare in 1960. Congressional investigators concluded that "growers had taken a calculated risk in using (the) aminotriazole, and had lost."⁴¹⁹

Limited economic impact across the nation was a likely cause for the cranberry industry's inability to rally enough public and administrative support in the face of the Delaney clause to prevent the scare. The short term effects of the cranberry scare extended until 1962, when the price per barrel returned to pre-1959 levels. The loss of the 1959 Thanksgiving and Christmas markets depressed the industry and crop values for several years, but it did not have any substantive effect on production. Subsequent crops continued to generate carryovers, with an average carryover of 150,000 barrels in

⁴¹⁸ "Then the Tornado", Ocean Spray Newsletter, Vol. 2, No. 12 (Wisconsin Rapids, Wisconsin), 6.

⁴¹⁹ Egan and United States. Congress. House. Committee on Interstate and Foreign Commerce. Special Subcommittee on Legislative Oversight., *The Cranberry Problem. Study for the Special Subcommittee on Legislative Oversight of the Committee on Interstate and Foreign Commerce, House of Representatives, Eighty-Sixth Congress, First Session*, 24.

1960 and 1961, underscoring the need for better marketing to increase demand and a need for more products to consume surplus berries.⁴²⁰

Immediately following the scare, the Eisenhower administration sought to address growing concern over chemicals in food and their regulation. A January 20, 1960 cabinet report, “Chemicals and Food,” focused on the differences in the statutory responsibilities of the USDA and the HEW, as well as the enforcement burdens generated by the Delaney clause and zero tolerance chemicals. The report concluded that the USDA and HEW needed to establish liaison arrangements between departments, as well as among state, local and commercial entities. The report also recommended that the HEW and USDA submit proposals for improved enforcement of regulations and that both departments study how to best coordinate their efforts. The final recommendation was that HEW and USDA support a change in the law to allow carcinogen residues in animal feed as long as no residues or carcinogenic byproducts remained in the animal products when shipped to market.⁴²¹ Secretary Benson’s official response to the report concurred with its findings. He emphasized several times in his press release that users of chemicals needed to follow directions on the approved labels.⁴²² The recommendation to alter the Delaney clause to permit residues in animal feeds was supported in the

⁴²⁰ Eck, *The American Cranberry*, 40-41.

⁴²¹ “Cabinet Paper – Chemicals in Food”, January 20, 1960, White House Office: Cabinet Secretariat, Records 1953-1960, box 1, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1-6.

⁴²² “Chemicals and Food”, January 14, 1960, White House Office: Cabinet Secretariat, Records 1953-1960, box 1, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene, Kansas), 1-4.

passage of the 1960 Color Additives Amendment, but it was not added to the law until the Drug Industry Act of 1962.⁴²³

The Chemicals Panel on Carcinogenic Food Additives, a section of the President's Science Advisory Committee, studied the industry's concerns from January through May 1960 and offered suggestions to support public confidence, improve administration of the Food and Drug Act, and help prevent disturbance of the food supply. The panel consisted of nine eminent scientists, including Dr. Detlev Bronk, chairman, president of the Rockefeller Institute and president of the National Academy of Sciences, Dr. Alfred Gellhorn, director of the Institute of Cancer Research and professor of Medicine at Columbia University, and Dr. James Horsfall, Director of the Connecticut Agricultural Experiment Station. The Panel's assessment supported the purpose of the Delaney clause while acknowledging that minute quantities of carcinogenic materials might not have negative effects in humans. The panel concluded that application of the Delaney clause required scientific judgment and discretion in its interpretation, noting the large number of variables involved in determining carcinogenicity.⁴²⁴

The panel suggested that the Secretary of HEW appoint an advisory board to help him properly evaluate scientific evidence in cases where sanctions were under consideration. The board would consist of FDA, USDA, and National Cancer Institute

⁴²³ "Draft Statement on Background of Delaney Amendment", undated, Box 14, Folder 5, James Joseph Delaney Papers, 1950-1978 (M.E. Grenadier Department of Special Collections and Archives, University at Albany, New York), 1-6.

⁴²⁴ "Report of the Panel on Food Additives", May 9, 1960, Eisenhower, Dwight D., Papers as President of the United States 1953-1961, Administrative Series, box 23, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1-8.

scientists, as well as outside scientists nominated by the National Academy of Sciences. The panel suggested that if existing legislation did not provide the means for the Secretary of HEW to exercise the proper discretion, then new legislation should be sought. It also recommended placing greater emphasis on studies to determine the best means of extrapolating data from test animals to humans and that the USDA expand its research programs to find alternative materials and processing methods.⁴²⁵

George Kistiakowski endorsed the panel's findings for the Science Advisory Committee and summarized the panel's findings to the President. Kistiakowski noted that the President was eager for the Science Advisory Committee to determine whether the USDA was doing too little, too much, or just enough research, especially regarding how much money was being spent on the issue. Secretary Benson agreed with the report's findings and recommended that the report be made public, while Secretary Flemming opposed publication because some elements of the report did not fit FDA interpretation of the law.⁴²⁶ The central significance of the document was that it outlined the regulatory and scientific difficulties inherent in the Delaney clause and suggested repealing it in favor of applying scientific discretion, which happened 36 years later. Although I found no evidence that the panel's findings were published as written, the

⁴²⁵ Ibid, 9-10.

⁴²⁶ Memorandum for the President from George Kistiakowski, May 9, 1960, Eisenhower, Dwight D., Papers as President of the United States 1953-1961, Administrative Series, Box 23, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

interpretations and conclusions from the May 1960 report became part of a report by the Food Protection Committee of the National Research Council in December.⁴²⁷

The cranberry scare was both public and expensive for the Eisenhower administration. Secretary Flemming's uncompromising support of the law put the health and safety of the American public before economics and the concerns of industry, but his actions resulted in substantial negative publicity and millions of federal dollars spent.⁴²⁸

Flemming had a distinguished post-scare career, although there was no sign of aspiration to the presidency. Stepping away from his government roles for a period, Flemming served as the president of the University of Oregon from 1961 to 1968. In 1971, President Nixon appointed him U.S. Commissioner on Aging, and he served on the U.S. Commission on Civil Rights from 1974 to 1981. He was an advisor to President Clinton on aging and received his second Presidential Medal of Freedom in 1994 for his service to the nation. The first had been awarded by President Eisenhower in 1957.⁴²⁹

Congressman Delaney continued lobbying for food safety legislation and resisted efforts to "nibble away" at the Delaney clause.⁴³⁰ He had a strong presence in shaping the Color

⁴²⁷ National Research Council (U.S.) Food Protection Committee., *Problems in the Evaluation of Carcinogenic Hazard from Use of Food Additives*, (Washington D.C.: National Academy of Sciences National Research Council, 1960), 1-19.

⁴²⁸ Report, January 26, 1960 (Laguna Niguel, California), 12-17.

⁴²⁹ "Arthur S. Flemming", *Ohio History Central*, July 1, 2005, p. 1 and Oral History Interview with Arthur S. Flemming, E. Allan Lightner, Jr., October 26, 1973, 51p. (Harry S. Truman Library, Independence, MO).

⁴³⁰ "Draft Statement on Background of Delaney Amendment", undated, Box 14, Folder 5, James Joseph Delaney Papers, 1950-1978 (M.E. Grenadier Department of Special Collections and Archives, University at Albany, New York), 1-6.

Additives Amendment of 1960 and subsequent legislation to amend the Food and Drug Act until his retirement from public service in 1978.⁴³¹

The cranberry industry viewed the cranberry payment program as the final resolution to the scare. The 1959 season was over, the industry had avoided complete financial collapse, and it could move forward. The administration took some responsibility for the industry's loss and tried to alleviate some of the financial loss in the lost 1959 crop.⁴³² An increase in government allocation of cranberries to soldiers around the world helped distribute the purchased 1959 berries before the 1960 season created new surpluses.⁴³³

The 1961 Agricultural Act amended the Agricultural Marketing Agreement Act of 1937 (AMAA) to include cranberries, cherries and apples. The AMAA permitted the Secretary of Agriculture to regulate commodities markets if approved by a majority of the producers and processors. The amendment extended the power of the Secretary of Agriculture to set price controls to the end of any annual marketing season so that the commodity market could avoid disruption of the marketing of any commodity.⁴³⁴ The Cranberry Marketing Committee (CMC), first activated in 1962 by USDA Secretary Orville Freeman, managed production volume, distribution, marketing and promotion for cranberries throughout the US to maintain a stable and profitable market. Annual

⁴³¹ Letters and Congressional testimony, March 16, 1960-February 21-1962, Box 2, Folder 15, James Joseph Delaney Papers, 1950-1978 (M.E. Grenadier Department of Special Collections and Archives, University at Albany, New York)

⁴³² White House press release, March 30, 1960, Central Files, Official File, box 542, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas), 1-2.

⁴³³ Memorandum for the Assistant Secretary of Defense (Supply and Logistics), February 1, 1960, Gerald D. Morgan papers, Records 1953-1961, Box 7, Dwight D. Eisenhower Presidential Papers (Dwight D. Eisenhower Library, Abilene Kansas).

⁴³⁴ *Agricultural Marketing Agreement Act, U.S. Code 7 (1937) § 601.*

carryovers were managed by fixing market prices and creating a stable demand throughout the year, preventing buildup and ensuring the sale and distribution of the crop before the next year's harvest.⁴³⁵

The CMC used two regulation programs to adjust the volume of cranberries available to meet market demand. First, a withholding program provided “free” and “restricted” percentages of the annual cranberry crop that producers could place on the market. The percentages, determined by the CMC on an annual basis, applied to all producers equally. The CMC used withholding programs in 1962, 1963, 1970, and 1971. The CMC added a second volume regulation method to its arsenal, a producer allotment program, in 1968. Producer allotment programs provided individual producers with percentages of their crop based upon an average of the previous few years. The percentages determined how much they could produce and market in that year. Both volume regulation methods allowed for marketing of free berries to any commercial market but restricted berries had to be distributed to non-competitive outlets, such as charities, research, development projects, non-human food uses and international outlets other than Canada. Producer allotments were far more flexible and better served the needs of the CMC.⁴³⁶

A 1969 study compared weekly household consumption of cranberries before, during, and after the scare. Three hundred families in Atlanta, Georgia, were the admittedly limited subject pool. The study determined that, although per capita

⁴³⁵ Thomas L. Pedersen, *The 1962 Cranberry Marketing Order, as Amended, as a Solution to the Price-Cost Relationship in the Cranberry Industry* (1972), 1-30.

⁴³⁶ Farrimond, David. “Cranberry Marketing Order Volume Regulation”, Cranberry Marketing Committee (1999), 1-5.

consumption of cranberries dropped 26 percent in 1959, local consumption levels returned to pre-scare levels immediately in 1960. The study concluded that the scare had no significant effect on demand for cranberries in the Atlanta region and suggested that advertisements were a significant factor in the quick rebound.⁴³⁷ Overall, national sales and consumption took until 1962 to return to pre-scare levels.⁴³⁸ Industry diversification efforts and new marketing campaigns were required in all major markets to return consumer demand to pre-scare levels.⁴³⁹

After 1962, subsequent scares and broadening anti-carcinogen legislation blurred the impact of the cranberry scare. The 1962 publication of Rachel Carson's *Silent Spring*, the 1970 creation of the Environmental Protection Agency, and shifts in scientific outlook, such as the push toward de-minimis tolerances and human analogue testing each moved the discussion in a new direction. The FDA continued to seek out and ban chemicals falling under the umbrella restriction of the Delaney clause. Supported by the Delaney-like clauses in the Color Additives Amendment, the FDA banned DDT in 1962, cyclamates in 1969, and many other chemicals through 1997.⁴⁴⁰ (See Appendix A for a more detailed chronological timeline of the scare)

The alar scare in 1989 is a good example of how similar some subsequent scares were to the cranberry scare. Alar (daminozide), a chemical ripening agent manufactured by the Uniroyal Chemical Co., Inc., had been in use since 1968. Alar was first shown to

⁴³⁷ Joseph D. Brown, "Effect of a Health Hazard 'Scare' on Consumer Demand," *American Journal of Agricultural Economics* 51, no. 3 (1969), 676-78.

⁴³⁸ United States Crop Reporting Board., *Fruits, Non-Citrus, by States, 1959-64: Production, Use, Value*, 36.

⁴³⁹ Letter to the Patrons of Oceanspray, December 1963 (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin), 1-2.

⁴⁴⁰ Lieberman, Kwon, and American Council on Science and Health, *Facts Versus Fears: A Review of the Greatest Unfounded Health Scares of Recent Times*, 5-51.

cause cancer in laboratory animals 1973. After many rounds of questions, tests, temporary industry bans, and apple industry statements that alar was harmless, CBS-TV's 60 Minutes presented a story to the public. Based on a report prepared by an environmental group, the National Resource Defense Council (NRDC), the TV story cited the danger of cancer from prolonged exposure to the chemical's residues and made the concern over the chemical into a crisis. The story caused widespread public fear, national bans and recalls of apples, calls for increased legislation to protect the public, and eventually led to the abandonment of the chemical.⁴⁴¹

Anxieties over food adulteration and governmental control were set firmly in the public's consciousness by repeated scares. Americans became desensitized to potential dangers and used to simply adding another item to the list of things to fear. The result has been a very predictable response to media coverage of a potential cancer hazard. Scientific, medical, and public institutions have continued to educate the public concerning the nature of additives, their food, and the results of exposure to various risks, but scares have continued to occur. Subsequent scares have reflected in part the continued presence of the anxiety that helped generate the cranberry scare.⁴⁴²

The current social climate is very similar to that of 1959 and the cranberry scare. Food fear is alive and well, and although the societal stresses and fears have changed, they still generate a similar environment of anxiety.⁴⁴³ Loss of global habitats, ever more complex chemicals, irradiated foods, and the new addition of genetically engineered

⁴⁴¹ Kerry E. Rodgers, "Multiple Meanings of Alar after the Scare: Implications for Closure," *Science, Technology, & Human Values* 21, no. 2 (1996), 177-92.

⁴⁴² Stacey, *Consumed: Why Americans Love, Hate, and Fear Food*, 130-50.

⁴⁴³ Morris and Bate, *Fearing Food: Risk, Health and Environment*, 141-65.

materials add to concerns over food purity. At the same time, political unrest, economic instability, and the threat of destruction by implacable and often invisible foes haunt our thoughts and media coverage.⁴⁴⁴ Recent episodes of food contamination have included melamine in foods from China, repeated E. coli contaminations of spinach and other pre-washed salads, and salmonella in peanut butter.⁴⁴⁵

A common factor between the cranberry scare and most subsequent scares was technology in all of its various incarnations. Technology has served as both cause and catalyst in many scares. Misused technology caused the scare; media technology spread the fear, and testing technology worked to identify and solve the problem. Later scares such as the fear that electric blankets might cause cancer in children or that cell phones might cause brain cancer reflected the general fear that electromagnetic fields are harmful. These scares have also shown that society's fear of cancer is generalized, rather than being tied specifically to chemicals in food.⁴⁴⁶

The cranberry scare and other scares have occurred in part because of the ease of transmitting the information about the perceived problem, coupled with public misunderstanding or fear. The faster the information reaches a large number of people, the more intense the potential reaction.⁴⁴⁷ The media have consistently played a pivotal role in distributing the information and have often been the means by which information

⁴⁴⁴ Arnold and Sandlin, *Fear of Food: Environmentalist Scams, Media Mendacity, and the Law of Disparagement*, 1-5.

⁴⁴⁵ Barboza, David and Alexei Barrionuevo, *New York Times*, "Filler in Animal Feed is Open Secret in China," p. 1, April 30, 2007; Weise, Elizabeth and Julie Schmidt, *USA Today*, "Spinach Recall: 5 Faces, Five Agonizing Deaths. 1 Year Later," p. 1, September 20, 2007; Martin, Andrew and Liz Martins, *New York Times*, "Fallout Widens as Buyers Shun Peanut Butter," p. 1, February 6, 2009.

⁴⁴⁶ McIntosh, *Sociologies of Food and Nutrition*, 42-47.

⁴⁴⁷ Arnold and Sandlin, *Fear of Food: Environmentalist Scams, Media Mendacity, and the Law of Disparagement*. 61-66.

eventually reached the public to calm the fears.⁴⁴⁸ The long series of scares and the similarity of the circumstances surrounding each suggest why the cranberry scare has failed to inspire more than brief historical comment in the secondary literature. Although the cranberry scare was the first event of its kind, the series of scares since 1959 provided an ever-expanding recipe for activating the fears present in the public consciousness, making that first scare seem small and inconsequential in comparison.

The Delaney clause attempted to coordinate scientific understanding of cancer and chemicals with legislative control over additives in food. Flemming placed the clause directly in the path of scientific judgment during a period when societal fears and scientific uncertainty dominated the discussion of cancer.⁴⁴⁹

The short-term perception in the media of the first test of the Delaney clause was of a successful defense of public health, with a high cost for the cranberry industry.⁴⁵⁰ The long-term perception of the clause was less positive. Debate over the efficacy and scientific foundations of the clause began before its passage in 1958 and continued through the 1990s.⁴⁵¹ The controversial repeal of the Delaney clause as part of the 1996 Food Quality and Protection Act was both a victory for scientific methodology and a bending to industrial pressures. The removal of the Delaney clause replaced zero tolerance with scientific judgment and reopened the door for the FDA and food industry

⁴⁴⁸ Freudenburg and Pastor, "Public Responses to Technological Risks: Toward a Sociological Perspective," 395-7.

⁴⁴⁹ United States. Congress. House. Select Committee to Investigate the Use of Chemicals in Food Products., *Chemicals in Food Products, Hearings Before...*, 81-2 Created Pursuant to H. Res. 323, September 14-December 15, 1950, 639-44.

⁴⁵⁰ *San Francisco Chronicle*, "Cranberry Alarm Protected Public," p. 30, November 25, 1959.

⁴⁵¹ Barbara J. Culliton, "Delaney Clause: Defended against an Uncertain Threat of Change," *Science* 179, no. 4074 (1973): 666-8; Miller and Food and Drug Law Institute (U.S.), *A Symposium on the Delaney Clause : March 26, 1988, Washington, D.C.*, 28-33; Marjorie Sun, "Dump Delaney Clause, Schweiker Suggests," *Science* 211, no. 4480 (1981), 367.

to make judicious use of small amounts of potentially carcinogenic chemicals. The act replaced the Delaney clause with a new “negligible risk” definition of safety: “the Administrator has determined that there is a reasonable certainty that no harm will result from aggregate exposure to the pesticide chemical residue, including all anticipated dietary exposures and all other exposures for which there is reliable information.”⁴⁵² The 1996 act also emphasized integrated pest management (IPM) practices to battle pest plants and insects, and it focused on risk assessment based on scientific judgment.⁴⁵³ The EPA set a difficult task for itself by replacing the zero tolerance of the Delaney clause with the often subjective judgments of science.

Before 1959, bog maintenance and health was the focus of most cranberry research done at university and state research stations. Since the 1960s, they have instigated movement away from the use of chemicals toward alternative methods such as encouraging predator insects and animals. Industry-wide best management practices manuals (BMP) have become standard repositories of the latest research and methodologies. The regularly updated notebooks cover the latest research in bog development, water management, planting, weeding, insect control, harvesting, productivity, and marketing. To minimize the use of chemicals, most bog managers use integrated pest management practices, which are coordinated efforts to prevent and

⁴⁵² Mark Phillips and Leonard P. Gianessi, "An Analysis of the Economic Benefit Provisions of the Food Quality Protection Act," *Review of Agricultural Economics* 20, no. 2 (1998), 378-80.

⁴⁵³ Ottea, James, The Food Quality Protection Act of 1996, *Louisiana Agriculture* 41, no. 4, Fall 1998, 25.

eliminate insect and weed infestation. Periodic flooding, hand weeding, insect trapping and counting, and the encouragement of predator species are parts of any good IPM.⁴⁵⁴

An effect of the cranberry scare and similar events has been substantial growth in the science of chemical testing and evaluation. The need to detect smaller amounts and to evaluate increasingly complex systems of effects stimulated the science of testing. As the science of analysis has improved, understanding of the nature and effects of chemicals in the environment and in humans has grown. Legal tolerances have been raised or lowered in keeping with the improved understanding of how the chemicals affect us. Thus observing the Delaney clause resulted in increasingly stringent guidelines and tolerances that make it difficult to avoid some degree of contamination in almost anything. The increase in testing sensitivity generated one of the primary arguments for repeal of the Delaney clause; specifically that strict application of the law undermined the ability of the food and agricultural industries to produce almost any foodstuff that was free of some degree of contamination.⁴⁵⁵

Disagreement over the applicability of animal testing to human physiology continued to be a major factor in subsequent scares. Almost all of the scares between 1959 and 1997 resulted from extrapolation of animal test data to humans. Similar procedures remain in effect today, although some scientific analyses were criticized when applied to human problems. The central difficulty in arguing against the applicability of animal testing was in suggesting an alternative. The extremely long time

⁴⁵⁴ Harker et al., *Cranberry Agriculture in Maine : A Grower's Guide*, Chapter 13, Cranberry Pest Management, 1-15.

⁴⁵⁵ Weideman, "Toxicity Tests in Animals: Historical Perspectives and New Opportunities," 222-25.

spans required in human and chimpanzee or monkey studies made them non-feasible. Without the freedom to do direct human testing, which was strictly controlled by medical ethics and FDA rules, there was no alternative that provided a clear analog to human physiology.⁴⁵⁶

As the cranberry scare receded into memory and numerous subsequent scares-- including scares about pesticide and herbicide residues, sweeteners, automotive emissions, and electromagnetic energy-- took its place, administrative efforts began to drift away from strict adherence to the Delaney clause toward a de-minimis perspective. Creation of the EPA in 1970 and its close association to the FDA added new energy and focus to chemical testing and management, but the Delaney clause remained in effect.⁴⁵⁷ The EPA began using a de-minimis or negligible-risk interpretation in its assessment procedures in the late 1980s, but a Federal court ruling, *Les v. Reilly* (9th Cir. 1992), citing the specific and clear intent of the clause, forced a return to Delaney restrictions in 1992.⁴⁵⁸

Since the repeal of the Delaney clause, regulatory agencies have focused increasingly on more flexible solutions to toxicity evaluation. The most recent change in administrative perspective involved a 2008 cooperative effort between the EPA and the National Institutes of Health (NIH) to re-think the standard methodology for testing potentially toxic substances. The joint agency project combined the EPA's testing mandate with technological resources of the NIH's Chemical Genomic Center. The

⁴⁵⁶ Christopher Oleskey et al., "Pesticide Testing in Humans: Ethics and Public Policy," *Environmental Health Perspectives* 112, no. 8 (2004), 914-19.

⁴⁵⁷ Monosson, "Chemical Mixtures: Considering the Evolution of Toxicology and Chemical Assessment," 383-90.

⁴⁵⁸ J. Raloff, "Feds Reluctantly Accept Delaney Ruling," *Science News* 143, no. 20 (1993), 311.

project incorporated computer and robotic technologies into the testing and analysis phases to better identify the mechanisms of biological activity, to better prioritize chemicals in need of evaluation, and to develop improved models for the response of human systems to the chemicals. Their interaction might eventually end reliance on inherently limited and flawed animal testing.⁴⁵⁹

Cranberries in 1959 were a marginal fruit crop in the American diet, averaging only 0.3% of the annual U.S fruit crop between 1945 and 1965.⁴⁶⁰ Although popular holiday fare, they were not part of the regular American diet at other times of the year. The cranberry scare brought cranberries and the cranberry industry to the national stage. Despite the negative portrayal of the industry and its berries, the notoriety may have been positive. The broad advertising and the marketing push sponsored by the USDA immediately after the scare spread a great deal more information about cranberries and their uses than their re-established safety. Likewise, existing plans for Ocean Spray development and marketing of new product lines, such as juice products and dried berries, fell perfectly into place after the scare.

The new cranberries were no longer just for Thanksgiving and holidays, but for all year round.⁴⁶¹ Cookbooks provided possible evidence of the positive turnaround of cranberries after the scare. Although cranberry recipes and remedies were common in pre-scare books, the number of cranberry-related recipes increased throughout the 1970s

⁴⁵⁹ Collins, Francis S., George M. Gray, and John R Bucher, "Transforming Environmental Health Protection," *Science* 319, February 15 (2008), 906-7; Hogue, Cheryl, "NIH and EPA Collaborate on Chemical Testing Program," *Chemical and Engineering News* 86, no. 7, February 18 (2008), 7.

⁴⁶⁰ United States. Dept. of Agriculture., *Agricultural Statistics*, 1946, 161; *ibid.*, 1956, 143; *ibid.*, 1966, 213.

⁴⁶¹ "Facts on Ocean Spray Cranberry Juice Cocktail", August, 1960, Cranberry Collection, Research Materials (Wisconsin State Cranberry Growers Association Archive, Wisconsin Rapids, Wisconsin), 1-4.

along with the number of cranberry products on store shelves.⁴⁶² Although certainly not directly attributable to the scare itself, this phenomenon can be attributed largely to post-scare marketing developments within the cranberry industry and more effective utilization of the crop.

The cranberry “scare” defined the term as part of the cascade of developments surrounding the regulation of chemicals in food. The cranberry scare was exactly that, a scare. No one became sick or died as a result of the contamination, the FDA did its job according to the law, and the cranberry industry survived and eventually became stronger than ever. The events of the scare set the stage for future events, including further scares, scientific developments in toxicity testing and analysis, and shifts in how Americans look at chemicals in their food and environment.

The environmental movement found its roots in this period of discovery and anxiety. Several scares and increasing concerns over chemicals in the environment and food supply inspired Rachel Carson’s seminal work, *Silent Spring*, three years later. The book has often been cited as the beginning of the environmental movement, but the cranberry scare led the way in demonstrating that chemical regulation was a serious problem needing a solution.⁴⁶³ Although the cranberry scare is not mentioned in *Silent Spring*, Carson definitely took part and gained valuable knowledge from the proceedings. She attended the November 18th meeting between the FDA and cranberry

⁴⁶² General Foods Corporation. General Foods Kitchens., *The General Foods Kitchens Cookbook* (New York: Random House, 1959), 122, 44-5; Ruthe Eshleman and Mary Winston, *The American Heart Association Cookbook : Recipes Selected, Compiled, and Tested under the Direction of Ruthe Eshleman and Mary Winston ; Illustrations by Tonia Hampson and Lauren Jarrett*, (New York: D. McKay, 1984), 141, 283, 360-1.

⁴⁶³ Whelan, *Toxic Terror: The Truth Behind the Cancer Scares*, 59-86.

industry representatives. She was very impressed by the tenacity and preparedness of Secretary Flemming, but was very disapproving of the testimony of industry scientists, such as Dr. Astwood.⁴⁶⁴ As a precursor to larger scares and bigger problems, such as those concerning DDT and radioactive fallout, the relatively mild effects of the cranberry scare did not support her thesis of contamination and destruction.⁴⁶⁵

The cranberry scare was the first food scare to demonstrate the vulnerability of the food industry as well as American society to misinformation, lack of administrative preparation, and shifting public perception of food concerns. It opened the eyes of both industry and government to issues concerning chemicals in food that had been building over the previous decades, and it provided a sense of what future controversies would be like. Government and media remained on alert for similar problems, and the public remained tense and ready to react to potential threats.

⁴⁶⁴ Rachel Carson, Dorothy Freeman, and Martha E. Freeman, *Always, Rachel: The Letters of Rachel Carson and Dorothy Freeman, 1952 - 1964*, Concord Library (Boston, MA: Beacon Press, 1995), 290-91.

⁴⁶⁵ Priscilla Coit Murphy, *What a Book Can Do: The Publication and Reception of Silent Spring*, *Studies in Print Culture and the History of the Book* (Amherst: University of Massachusetts Press, 2005), 11-18.

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APPENDIX A

CRANBERRY SCARE TIMELINE

- January 1956 - FDA becomes aware of the use of the herbicide aminotriazole on cranberry bogs and began investigation into residues and tolerance levels.
- March 1957 – USDA supports application for use of aminotriazole on a no-residue basis.
- April 1957 – FDA refuses no-residue application based on inadequate research data.
- July 1957 – NCA recognizes aminotriazole had been used during 1957 growing season in New England, but investigation showed no contamination.
- October 1957 – FDA investigates reports of aminotriazole use in Washington and Oregon regions resulting in segregation of 2,460,000 lbs (approximately 30% of the crop) pending tolerance application.
- January 1958 – USDA registers aminotriazole for cranberries on a no-residue basis, to be applied only 7-10 days after harvest.
- February 1958 – Cranberry industry institutes educational program about aminotriazole use, which continued through October 1959.
- April 1958 – FDA receives application for a 0.7 ppm tolerance from American Paint and Chemical (AmChem), to be applied no later than 10 days after harvest.
- May 1958 – FDA tables AmChem petition pending results of toxicity studies.
- January 1959 – NCA requests information from FDA concerning application.
- February 1959 – AmChem Products, Inc. and American Cyanamid Co. file a joint petition for a 1 ppm tolerance on aminotriazole for apples, pears, and cranberries.
- April 1959 – FDA tables NCA petition concerning the quarantined berries and pre-harvest aminotriazole use due to lack of data.
- May 1959 – FDA Division of Pharmacology concludes that tolerances should not be set because studies showed that aminotriazole is a carcinogen. These results were later confirmed by American Cyanamid studies.
- June 1959 – Amchem and American Cyanamid withdraws their application. FDA begins working to improve the method for detecting aminotriazole residues to increase testing

efficiency. NCA institutes industry-wide ban on aminotriazole whether it was used according to the instructions or not.

July 1959 – FDA begins investigation into possible contamination of the 1958 and 1959 crops.

September 1959 – FDA develops evidence on further aminotriazole use in the Oregon area. The NCA provides affidavits from each member grower certifying no aminotriazole use after the June ban. Berries from non-certified members are not accepted. Independent growers are unaffected by the ban.

October 1959 – FDA increases investigations in Washington and Oregon with the discovery of aminotriazole use. All suspect lots are set aside, and the FDA advises the NCA and growers that interstate shipment of contaminated berries would be illegal.

November 9 1959– Secretary Flemming holds a formal press conference announcing the discovery of contaminated cranberries and begins the scare. Newspapers, radio and television around the U.S. pick up the story.

November 17 1959- Flemming reports berries cleared as of November 17 to White House. Slightly more than one fifth of one percent (0.022%) of tested samples was found contaminated.

November 18 1959– FDA and cranberry industry conference sets out a labeling plan to clear berries.

November 19 1959– Ocean Spray releases cranberry industry plan to sort cleared berries and solve the aminotriazole problem to the press.

December 8 1959– Special Subcommittee on Legislative Oversight of the House Committee on Interstate and Foreign Commerce meets to discuss the cranberry problem. FDA, HEW and USDA personnel testify along with industry representatives.

January 1960 – White House begins an internal investigation into the concerns of chemicals in food looks specifically at the interrelationship of FDA and HEW and known carcinogenic problems, such as the animal growth hormone diethylstilbesterol.

January 26 1960– Secretary Flemming reports to the Committee on Interstate and Foreign Commerce concerning the cranberry scare and concerns over diethylstilbesterol.

January through May 1960– Panel on Food Additives, led by Dr. George Kistiakowski, looks at the scare and sought ways to avoid similar events in the future. The panel researches and works to produce a detailed report, which is completed in May.

May 9 1960 – The cranberry payment program begins. The program requires significant paperwork, including inspection records proving that berries were uncontaminated and a formal invoice from the cooperative or processor managing the crop. Contaminated berries had to be destroyed.

July 12 1960 – The Color Additives Amendment takes effect. The bill contains a Delaney-like clause similar in wording and effect to the original.

1961 – Congress amends the Agricultural Marketing Agreement Act (1937) to allow marketing orders for cranberries. The Cranberry Marketing Committee uses producer allotments and withholding programs to eliminate the carryover problem.

1996 –The Food Quality Protection Act (1996) repeals the Delaney clause. The act replaces the Delaney clause with a new “negligible risk” definition of safety, effectively returning scientific judgment to the forefront in determining residue safety.

APPENDIX B

SUBSEQUENT CANCER SCARES BASED ON THE DELANEY CLAUSE⁴⁶⁶

DDT – 1962 – carcinogen tests and hypotheses led to worldwide ban on DDT

Cyclamates – 1969 – testing led to Delaney ban of cyclamates

DES in beef – 1972 – ban resulted from cancer at higher dose levels

Nitrites – 1972 – breakdown products thought to generate tumors

Red dye number 2 – 1976 – animal testing led to Delaney ban

Saccharin – 1977 – animal testing led to required labeling which was repealed in 2000

2, 4, 5-T – 1979 – second herbicide banned under Delaney

Coffee and pancreatic cancer – 1981 – data linked coffee and cancer

EDB – 1983 – automotive emission residues in groundwater caused alarm

Alar – 1989 – television coverage of chemical use caused scare

Electric blankets – 1989 – brain tumors feared from electromagnetic fields

Benzene in Perrier – 1990 – minute quantities of carcinogen produced huge fears

Asbestos in schools – 1993 – fear for schoolchildren prompted a new abatement industry

Cellular phones – 1993 – brain tumors feared from electromagnetic signals

⁴⁶⁶ Lieberman, Kwon, and American Council on Science and Health, *Facts Versus Fears: A Review of the Greatest Unfounded Health Scares of Recent Times*, 5-51. The ACSH, funded largely by corporate donations, is a consumer education organization with strong political motivations in the environmental movement. The source is used only as a list of cancer scare events, their basic motivations and dates.

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