Food Recalls and the American Public: Improving Communications

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Executive Summary

This paper provides guidance for government and industry groups who communicate about food recalls and foodborne illness outbreaks. While the overall safety of the American food supply is good, several recent high profile outbreaks have resulted in increased attention on the food system, and the American public has the sense that food recalls are occurring more frequently. With additional improvements in outbreak surveillance and the technical ability to identify outbreak strains of pathogens, it is likely that there will be more warnings, advisories, and recalls in the future. As a result, providing clear, motivating, and accurate communication about food recalls to the public will be more essential than ever.

Wherever possible, the recommendations provided here are based on empirical data, most of it collected by the Rutgers Food Policy Institute (FPI). In addition, the recommendations provided fit within a framework rooted in the psychology of health behaviors and behavior change. Simply telling people about a food recall is often not enough to motivate them to look for and discard recalled products. Instead, getting people to take action requires that they are aware of the recall, believe it applies to them, believe that the consequences are serious enough to warrant action, can identify the affected products, and believe that discarding (or returning) the product is both necessary and sufficient to resolve the problem. The framework used here also recognizes that getting people motivated to take action is only the first responsibility of food recall communications, because once the problem that led to the recall has been properly solved, consumers must also receive the message that the products are safe again to eat.

This paper presents ways to improve awareness, increase relevance, convey consequences, accentuate identifying information, compel appropriate actions and reestablish consumer confidence, and each is discussed at length. Each recommendation on its own is a necessary but not sufficient component of successful food recall communications. By providing the guidance in this report, we hope to help communicators maximize the number of people who get their messages about food recalls, as well as increase the likelihood that the public will take appropriate precautionary behaviors and perform them successfully, without losing confidence in the food supply.

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Introduction

Food safety is undoubtedly high on the national agenda. Following highly publicized recalls of spinach, peanut products, and other foods over the last several years, there have been increasing calls for government and industry action to improve the safety of the American food supply. Recent data from the Food Marketing Institute suggests that nearly one-third of Americans have stopped purchasing a food product because of safety concerns, and nearly three-quarters say they are only "somewhat confident" in the safety of food at their local supermarket, expressing a particular lack of confidence in imported foods.[1]

In response to consumer concerns, President Obama has declared that food safety is an important policy priority for his administration,[2] and new food safety legislation is currently moving through Congress.[3,4] This increase in public, political, and regulatory attention on the safety and quality of food also comes at a time when, through books, blogs, magazines, movies, and interviews in the mainstream media, critics have questioned the underlying practices of modern agriculture and of the American food system.

Indeed, while the overall safety of the American food supply remains high, our research indicates that the American public has the sense that food recalls are occurring more frequently,[5] reinforcing the idea that there are fundamental problems in the food system. In fact, the ability to detect outbreaks of foodborne illness *has* been significantly enhanced by both the Foodborne Diseases Active Surveillance Network (FoodNet) and PulseNet systems managed by the Centers for Disease Control and Prevention (CDC). The FoodNet actively monitors patterns of reports of foodborne illnesses at ten sites across the country[6]. The PulseNet system also makes it possible to more quickly identify clusters of common source foodborne illness through "DNA fingerprinting" of pathogens through pulsed-field gel electrophoresis and comparing that fingerprint with a database of foodborne pathogens maintained by the CDC.[7] This technique permits researchers to rapidly distinguish specific strains of organisms such as *Campylobacter, Escherichia coli* O157:H7, *Listeria, Salmonella,* and *Shigella* at the DNA level and to identify patterns of reporting of those strains across locations and over time. As a result, it is possible to identify outbreaks of foodborne illness that in the past would likely have gone undiscovered. In addition, because outbreaks can be identified faster, there is a greater likelihood that the foods associated with the outbreak may be subject to recall.

As a result of these advances, and as the FoodNet and PulseNet systems are expanded and refined, the number of foodborne illness outbreaks identified in the near term is likely to

increase, as will the number and extent of food recalls associated with them. Thus, the need to effectively communicate about food recalls will has never been more important.

This paper is designed to provide empirically-based recommendations to help government and industry improve their communications about food recalls. It draws on data from a number of studies conducted by The Food Policy Institute (FPI) at Rutgers University, including a series of national telephone surveys, key informant interviews with federal, state and industry officials, analyses of press releases from federal agencies, and studies of television and newspaper coverage of several food recalls. The findings from these studies are described in more detailed reports available on our website, www.foodpolicy.rutgers.edu.

In addition, the recommendations provided here are based on well-studied models of health behavior that have been developed to understand, predict, and influence the public's health,[8] these include the Health Belief Model, the Transtheoretical Model, the Theory of Reasoned Action, and the Theory of Planned Behavior. While these models have not been previously applied to the problem of getting consumers to protect their health by responding appropriately to food recalls, they have been successfully used to examine a wide range of other health behaviors,[9] including those related to food safety[10,11] and food choices.[9]

The recommendations provided here fit well with the existing literature on risk and crisis communications. There have been multiple lists of "best practices" for risk and crisis communicators.[12,13] Many of these touch on similar themes; for example, offering advice to "communicate with compassion, concern, and empathy" and pointing out that it is important "to meet the needs of the media and to remain accessible."[14] While these general principles constitute good advice, they are not specific to food recall communications, and are largely concerned with "*how"* to communicate with the public and the media, not *"what"* to communicate. In contrast, the recommendations offered below are focused on improving food recall communications by providing specific, relevant information to consumers, designed to alert them to the fact that a food recall has occurred, help them identify the products involved, and to motivate them to take appropriate actions.

Why Communicating with the Public about Food Recalls is Unique

It is important to begin by recognizing that communications about food recalls are unlike most other kinds of interactions that government, industry, and consumer groups typically have with the public. Fundamentally, food recall communications are intended to warn the public of potential risks associated with specific food products. The worst thing that can happen when food recall communications are unsuccessful is that people unnecessarily get sick, suffer, or die because they do not hear about the recall, cannot recognize the products involved, or are not sufficiently motivated to take appropriate actions to avoid consuming them.

Therefore, the warnings associated with food recalls must be broad enough to reach all those potentially affected, successfully alerting them that a food they may have purchased or have in their homes is subject to a recall. They must also be detailed enough to provide essential information to enable the public to distinguish which products have been recalled and which have not, and to properly handle and dispose of such products. They must also be strong enough to grab people's attention, motivating them to look for recalled products and to take appropriate actions if they find them.

At the same time, all of this must be done without unnecessarily frightening people, which may lead consumers to avoid otherwise healthy, nutritious foods that are not part of the recall. Failure to do so can result in companies (and often, entire agricultural or food sectors) losing substantial portions of their customer bases, including export markets. The associated drops in consumer demand combined with the costs of damage to perceived reputation and the loss of market value of company stock can create significant economic problems well beyond the specific companies involved with the recall. In addition, the necessity of a food recall alerts consumers to what may easily be seen as a failure by an individual, company, industry, or regulatory system to keep their food safe and wholesome. Unsatisfactory explanations of the causes of such failures and a lack of credible assurances that the problems have been corrected and are unlikely to be repeated can lead to losses in public confidence in both the companies involved and in the entire food system. Indeed, dips in consumer confidence in the food supply have accompanied recent national recalls of food products.[15]

Finally, after the problems that led to the recall have been resolved, successful communications must also alert the public to that fact and motivate people to resume purchasing and consuming safe and wholesome products again. This sets food recall communications apart from most other efforts to communicate with the public about food safety, food choices, health, and nutrition. These typically deliver consistent, enduring messages to consumers designed to permanently influence their ongoing behaviors. In contrast, food recall communications must be dynamic, successfully warning people to avoid certain products when they pose a threat and then, with equal success, alert people when the danger has passed.

Successfully Communicating with the Public about Food Recalls

Ultimately, the goal of any food recall is to prevent unnecessary illness, suffering, and death that may result from consuming a contaminated product. To achieve this outcome, food companies work hard to retrieve or destroy as much recalled product from the retail and food distribution system as possible. However, once they are sold, the only way to eliminate consumer exposure to recalled products is for individual purchasers to locate and appropriately dispose of them. As a result, the success of food recalls critically depends on getting individual consumers to take appropriate actions.

Unfortunately, the preponderance of evidence indicates that getting consumers to act--even to protect their own health--is extremely difficult, and motivating food-related behaviors is no exception. The problem is that research shows that simply providing information to people is necessary, but typically not sufficient to motivate changes in their behaviors.[16] People often clearly understand "the facts" yet fail to practice behaviors they know would be more likely to keep them healthy.

Therefore, food recall communications must go beyond simply providing an announcement that a particular set of food products are subject to a recall. Our research found that most Americans (84%) say they pay close attention to news reports about food recalls, and 81% say that when they hear about a food recall, they tell others about it. Yet, fewer than 60% of Americans say they have *ever* checked their home for a recalled food item.[5]

The truth is, except in rare cases, simple warnings just do not directly translate into concerted consumer actions. Instead, studies of the psychology behind the adoption of other health-related behaviors suggest that getting consumers to act in response to a food recall only *begins* with making them aware that a problem exists with a food product. In addition, they must also believe that this problem is relevant to them. They must also be convinced that the consequences of this problem (illness, suffering, or death) are serious enough to warrant action. They also have to believe that they can successfully take the recommended actions. For food recalls, this means that they have to be able to identify affected products. They must also be satisfied that the actions they have been asked to take, discarding the product for example, are both necessary and sufficient to take care of the problem. Finally, after the problem leading to the recall has been rectified, consumers need to be convinced that the food is safe again.

While it is clear that the power of information alone to influence human behavior is quite limited, it is also apparent that to *enable* appropriate consumer actions, successful food recall communications must provide relevant and compelling information related to each of these essential beliefs. Unless people are convinced that the problem is serious and applies to them, they are unlikely to be sufficiently motivated to look for recalled food products. If they cannot successfully distinguish affected from unaffected products, they are likely to either under-react by assuming that they do not own any of the recalled products, or over-react by discarding or avoiding the purchase of anything that resembles it. If they are not convinced that disposing of the recalled product is really necessary, they may try to render it safe through efforts to wash or cook it instead. If they are not assured that the problem that led to the recall has been solved, they may continue to avoid the products long after it is necessary.

Improving Awareness

Making consumers aware of a food recall is the first step in getting them to take appropriate actions. In the case of recent, large-scale national recalls, public awareness has been quite high.

In the case of the FDA's advisory to consumers concerning *E. coli* contaminated spinach in 2006, our research found that 87% of Americans said that they had heard about the recall.[17] We found that 93% of Americans were aware of the FDA's 2008 warning concerning *Salmonella* Saintpaul,[18] and 81% reported being aware of recalls of ground beef during the previous two years.[5] Similarly, in 2009, 93% of Americans said that they had hear or read about the recall of peanut products related to *Salmonella* contamination.[19]

Unfortunately, national news outlets typically only give substantial coverage to large-scale or other "news worthy" recalls, and consumer awareness of food recalls appears to be tied to relevant media attention. Consistent with this, our 2008 survey shows a pattern in consumer awareness of recalls based on the media attention they received. While more than nine in ten Americans had heard about FDA warnings concerning tomatoes and *Salmonella*, only 23% reported being aware of the recall of canned chili, and 17% of the recall of cantaloupes. While both of these recalls were national in scope, they did not receive the same widespread media attention as the *Salmonella* Saintpaul outbreaks. Other studies of smaller, regional food recalls have found similarly low levels of awareness.[20] Less-extensive recalls involving relatively small quantities of product, and particularly those restricted to the regional or local level, are understandably less likely to get much coverage on the national news or in large-circulation newspapers. As a result, companies involved in these smaller, less publicized recalls have to work much harder to get the word out about recalled products.

We know that television remains the way that the majority of Americans say they first hear about large food recalls. Two-thirds (66%) of Americans said that they first heard about the 2006 recall of *E. coli* contaminated spinach on TV, and 71% first heard about the 2008 *Salmonella* Saintpaul outbreak on TV. As such, television news programs, especially morning news programs, are likely to remain important outlets for providing consumers with information about food recalls.[21] Therefore, communications about food recalls specifically targeted for television, including available pictures or video of affected products may make it easier to reach a broad audience.

While television news remains important, the media consumption patterns of Americans are changing rapidly.[22] As an increasing number of consumers are using social networking sites such as Facebook, Twitter, and blogs, the USDA, FDA, CDC, and other federal agencies and industry organizations are starting to communicate with the public using these tools. For those consumers who are interested in seeking out the information, there are many ways that they can have information about food recalls "pushed" to their email accounts or electronic devices.

In addition to social networking tools, it may be helpful for those interested in communicating with the public about food recalls to partner with retailers as a means of getting the word out. By providing signs for point of sale communications, or paying to have recall messages printed

onto receipts or coupon print-outs, there are many promising ways for companies to partner with retailers to alert the public about food recalls. Communicating about food recalls while consumers are thinking about food may be an effective way to increase public awareness of specific food recalls.

Countering Fatigue and Confusion Over Time

Sometimes food recalls are straightforward, and a complete list of potentially contaminated products is quickly available and does not change over time. In such cases, it is obviously important to include specific information that will assist the public in identifying any affected products that they may have in their homes.

However, often well-publicized foodborne illness outbreaks involve long periods of investigation into the source of the problem. As a result of the evolving story, multiple communications are required. For example, during the ongoing investigation of the *Salmonella* Saintpaul outbreaks of 2008, the FDA provided multiple press releases, conference calls, and a dynamic list of states that were believed to be producing tomatoes that were unlikely to have been contaminated. They subsequently included some types of fresh peppers in the warning and ultimately dropped tomatoes from the warning. This resulted in much confusion for the general public. While 93% of Americans had heard that tomatoes were implicated in the Salmonella Saintpaul outbreak in 2008, far fewer (only 68%) had heard that the likely culprit, fresh peppers, were involved. In addition, more than two thirds of Americans (69%) indicated that they were uncertain about the types of tomatoes involved.[18]

Consider that when new information about a particular foodborne illness outbreak and associated food recalls are released over time, the public, and the media, will experience some degree of fatigue with the story. Unfortunately, after the initial news stories are released, new details about the contaminated products may be ignored by both the media and the public. Instead, later news coverage is likely to focus on other issues, including perceived responsibility for the contamination, stories about those made sick and the impacts of the illness on their lives. While such stories may keep the outbreak or recall in the news, they often fail to continue to provide essential information to consumers about the products involved, how to identify them, or what to do with them. They also often fail to provide consumers with details about where they can find such information. As a result, press releases, media advisories and stories developed for release directly to the public need to continually lead with information relevant to protecting public health including the symptoms of the foodborne illness and their potential consequences and how to correctly identify affected foods.

Problem with Language: Recovery, Withdrawal, Warning, Advisory, or Recall

One of the problems in communicating about outbreaks of foodborne illnesses and potentially contaminated food products is in what to call the advice that is offered to consumers. Most

consumers are likely to understand that a food recall implicitly means that some problem is associated with a particular food product. However, the recall of specific food products is typically the concluding outcome of a much longer process of investigation into a contamination problem.

To be clear, potential problems with products are often discovered as the result of routine food quality and safety testing and analyses conducted by food processors and manufacturers themselves. In such cases, because the problem is discovered by the manufacturer, it can be relatively quickly associated with products produced on particular processing lines, in particular lots, or on particular days. When this happens, products are often destroyed before they ever leave the facility or are subject to a *stock recovery*; that is, they are retrieved from the distribution system before they reach retail outlets to be sold to the consumer.

When a food product with a defect reaches the market, it may be subject to a *market withdrawal*, so long as the problem is minor and does not threaten public health. For example, when products are removed from store shelves and returned to the manufacturer because they are stale, this meets the technical definition of a market withdrawal.[23] Stories about market withdrawals rarely make the news because consumers are not typically in any danger if they consume the affected products. However, according to the FDA, a market withdrawal may also be issued for products where there is no evidence of a problem in the manufacturing or distribution of the product, yet may have been made unsafe as the result of product tampering.[24] The key is that in such cases "a product has a minor violation that would not be subject to FDA legal action."

If a company manufactures or distributes a potentially contaminated product that makes it to the retail level and it is sold to consumers, a voluntary *recall* of those affected products is warranted. Such recalls are announced in an effort to retrieve or destroy unsold products from retail shelves, and unconsumed products from the homes of consumers, restaurants, hospitals, food-service operations, and other institutions.

In many cases, food recalls result from foodborne illness outbreak investigations. In such cases, the foods responsible for the outbreak are often not readily apparent. Instead, epidemiological investigations attempt to determine what foods may have been involved. For example, in case-control studies, a group of ill patients is matched with statistically similar individuals who are not ill. The individuals are then interviewed to collect data concerning particular behaviors and consumption patterns during a specific period prior to the outbreak of the illness. Statistical comparisons are then used to identify contributing factors to the illness outbreak.[25]

Unfortunately, these studies can take a great deal of time to complete and are difficult to carry out. The acute symptoms of foodborne illness may take days or weeks to appear after

consuming affected products.[26] During that time, the remaining food may be consumed or discarded, and people's recollections of what they ate become less reliable. As a result, connecting specific food products to a foodborne illness outbreak can be extraordinarily difficult. Even when associations can be made with the consumption of particular types of food, identifying the specific brands and production information can be extremely difficult, especially when the packaging of the suspected foods have been discarded, or in the case of produce items, they may lack identifying information altogether. Without the ability to identify the specific products, brands, manufacturers or processors, there simply is not enough information for any specific company to issue a recall of its products. However, because consumers might benefit from avoiding products suspected of causing foodborne illness, a federal agency (typically the FDA) may issue an *advisory* or *warning* to consumers not to consume particular foods. This was the case with the 2008 *Salmonella* Saintpaul outbreak in which consumers were initially warned by the FDA in early June not to eat certain types of raw red tomatoes[27] and later, certain kinds of peppers. It was not until late July that a recall of jalapeno peppers was announced.[28]

The important point is that except for the FDA's authority to require a recall of infant formula, the federal agencies responsible for food safety cannot order companies to carry out recalls of their food products. However, the actions recommended to consumers to discard and not consume certain food products is essentially the same whether it is the result of an advisory or warning issued by a federal agency or is the result of a market withdrawal or voluntary recall issued by a company. What is typically different is the specificity of the products about which the advice is given (for example, *all* fresh spinach vs. fresh spinach packed under a particular brand name, with a specific lot number or production code).

The bottom line is that while there are technical differences in the definitions of stock recoveries, market withdrawals, advisories, warnings, and recalls, such distinctions are not likely to be understood by consumers, and are often blurred when reported in the media.

Alerting Hard to Reach Audiences.

While the first goal of food recall communications is to "alert the public," marketing and advertising professionals understand that there is no such thing as "*the* public," and that to be successful, they need to reach *multiple* publics. As a consequence, marketers have become increasingly sophisticated in their abilities to identify and reach specific market segments with messages that make sense to, and meet the needs of that particular group.[29]

For food recall communications to be more successful, similar market segmentation approaches may need to be adopted. The marketing departments of major food companies do

not rely on a single message to *sell* their products, so there is no reason to think that this is the most effective way to *recall* their products.

Indeed, research shows that people's concerns and behaviors regarding microbial risks typically differ by gender, ethnicity age, education, and income.[30] Our most recent survey allowed us to investigate which demographic groups are most likely to be unaware of food recalls, which we measured by combining the awareness of five separate recalls and advisories that had taken place over the two years prior to the survey conducted in 2008 (the recalls were canned chili, cantaloupe, and ground beef, and the advisories were against eating tomatoes and peppers). We found that younger consumers, those with lower levels of education, and unmarried individuals were less likely to be aware of the recalls and advisories.[5]

Importantly, there are also segments of the population who are particularly susceptible to severe health consequences or death from exposure to foodborne disease. These include pregnant women, infants, young children, the elderly, and the immune-compromised.[31] To help avoid these consequences, exceptional efforts may be required to reach these vulnerable populations with targeted messages. For example, the presence of undeclared allergens is a frequent cause for food product recalls. In such cases, reaching out to the Food Allergy & Anaphylaxis Network (FAAN), (www.foodallergy.org), would be an effective way to reach audiences who could benefit most from the information.

The central point is that a single press release, treating all audiences as if they were the same, is not enough; different approaches, different messages, and different means of communications are needed for different audiences. It is also essential to recognize that even *within* these various audiences, people differ in terms of their interests in food recall information and how this connects with their own needs, concerns, and responsibilities. Because of varying levels of education and experience, they may also have greater or lesser abilities to understand, put into context, or put into practice, the information or ideas presented in food recall communications.[32] If, as they should, the marketing department knows who buys the company's product, they should also be able to identify these audiences and help to create targeted messages.

Language Barriers

While most consumer advisories and warnings and notices of voluntary recalls are issued in English, it is important to recognize that more than 175 languages are spoken in the United States.[33] According to the Census Bureau, Spanish is the secondary language most often spoken in the United States; however it also tracks the location and number of speakers of thirty common languages and three groups of less commonly spoken languages in the U.S.[34]

In fact, according to the 2000 U.S. Census, nearly one-in-five (18%) members of the population speaks a language other than English at home. In addition, more than 21 million people who live in the United States report speaking English “with some difficulty” (8% of the population), including about 3.4 million Americans who report speaking English "not at all". Moreover, nearly 5% live in a “linguistically isolated household” where no member over the age of 13 speaks English “very well.”[34]

Consequently, to reach all of its intended audiences, food recall information may need to be made available in multiple languages in addition to English. In addition, failure to translate such information into commonly spoken languages might be construed by those who do not speak English as evidence that the company who sold them the contaminated products either does not care whether they get sick, or does not think they are in a group affected by the risk. Failure to take appropriate actions to communicate about risks with consumers who speak languages other than English could potentially raise legal liabilities, for example, when food products are targeted toward non-English speaking consumers or are marketed in other languages.

It is also important to recognize that written communications alone are unlikely to be sufficient to reach all those who need to be made aware of a food recall. In fact, the U.S. Department of Education[35] estimates that approximately 30 million American adults (14% of the adult population) have “no more than the most *simple* and *concrete* literacy skills.” This includes more than half (55%) of those who did not finish high school. It also includes nearly 40% of all Hispanic adults, 20% of all Black adults, 26% of those older than 65, and 21% of adults with multiple disabilities. An additional 63 million American adult (29% of the population) can perform only simple, everyday literacy activities. So, it is important to remember than many who need to understand and use information provided in food recall communications may be unable to read or write. For them, written warnings, information about products, and instructions about what to do with them are incomprehensible.

The issue of mathematical illiteracy “innumeracy” within the population must also be taken into consideration when constructing food recall communications. Unfortunately, many Americans have difficulty understanding the magnitudes of very large and very small numbers. They also have problems converting units of measurement, and have a hard time interpreting the meanings of fractions, proportions, and probabilities.[36] In addition, many Americans are likely to be unfamiliar with essential base-rate information related to food production and consumption. For example, if two thousand pounds of ground beef are recalled, what proportion of total ground beef production does that constitute in a year? As such, food recall communications that attempt to communicate important information using mathematical concepts may not be easily understood and may require additional explanation to put them into context.

However, in creating those explanations, it is useful to keep in mind that there are a large number of words commonly used in the English language to describe quantities and frequencies. Unfortunately, most of these are imprecise and easily construed in multiple ways. Words such as *few, little, some, many, often, sometimes, frequently,* and other descriptors can have different meanings for different people.[37] Similarly, words such as *important* and *significant,* are also open to interpretation.

Because of all of these potential differences among audiences and the ways in which they are likely to interpret food recall messages, it is critical to tailor approaches, messages, and channels for communicating so they most appropriately meet the needs, desires, and abilities of a particular audience. Unfortunately, creating general materials designed to meet the needs of all audiences risks meeting the needs of none.[32]

Improving Relevance

While alerting the public about recalled foods is an essential first step, people are only likely to take action if they believe that the warning applies to them. Indeed, perceived vulnerability, also called perceived risk, is central to most theories of health promoting behaviors and is often viewed as a necessary precursor to precautionary action.[38] In fact, people can view the consequences of a particular health threat as quite serious but fail to take preventive action because they do not find the risk to be personally relevant.

Unfortunately, this may accurately describe people's beliefs regarding food recalls. Most Americans (92%) agree that food recalls save lives, and 78% believe that most recalls are serious enough to warrant public attention. However, only half of Americans say that food recalls have had any impact on their lives, and relatively few (17%) think it is likely that they have recalled foods in their homes.[5]

To further assess the perceived personal relevance of food recalls, we asked respondents in our 2008 survey to name the food product they buy frequently that they also thought would most likely be subject to a future recall. In response, half (50%) named a meat product (especially beef and chicken), 22% named produce items, 9% named fish, dairy, and other products, and 19% said they did not know. We then asked the respondents to rate the likelihood that this food item would be recalled. In response, only 18% said it was "extremely likely," while 49% said it was "somewhat likely," 17% thought it "somewhat unlikely," 10% said it was "extremely unlikely," and 6% did not know. Most of the respondents thought that even the food item they viewed as *most* vulnerable was, at best, only *somewhat* likely to be involved in a future recall. So, while most Americans believe food recalls are important, they just do not appear to find them particularly relevant to themselves.

There are likely several explanations for this. One reason is that while most Americans believe that food recalls are increasing, most also underestimate the number of recalls that occur each year. In 2008, we asked participants to estimate the number of meat and poultry recalls and the number of recalls of products not involving meat and poultry that occurred during 2007. The respondent's *median* estimates were five for each category of food recall. That half of Americans thought there had been 10 or fewer food recalls during the previous year suggests that many view them as happening relatively infrequently. This is also an indication that most Americans were either unaware of many of the food recalls that had taken place in the year before the survey, or simply did not remember them, perhaps because they were not perceived as personally relevant.

Another contributing factor to this lack of perceived relevance is that name of the company issuing a particular recall may often not be recognized by consumers. This may be a particular problem when a food manufacturer or processor "co-packs" products for other companies or distributers to sell as store brands, packer label, and private label products. In such cases, the label on a product does not typically indicate who made the product, but rather who distributed it. As a result, when the producing company issues a recall, consumers may not recognize that they have purchased one of its products.

This was likely true with regard to the 2007 recall of multiple brands of canned chili, hash, stew, and pet food products manufactured by Castleberry's Food Company.[39] Castleberry's produced products under its own name, but also packed for 26 other labels including: Austex, Best Yet, Big Y, Black Rock, Bloom, Bryan, Bunker Hill, Cattle Drive, Firefighters, Food Club, Food Lion, Gold Star, Great Value, Kroger, Lowes Foods, Meijer, Morton House, Natural Balance, Paramount, Piggly Wiggly, Prudence, Southern Home, Steak N' Shake, Thrifty Maid, Triple Bar Ranch, and Value Time.[40] So, while media stories about the recall frequently referenced Castleberry's Chili as part of their headlines, consumers, food service operators, and owners of small stores may have easily missed the fact that for example, Meijer Corned Beef Hash was also one of the 90 products that was recalled by the Castleberry's Food Company. Similarly, the processor involved with the recall of contaminated spinach in 2006, Natural Selection Foods, LLC, produced bagged spinach under thirty brand names, all of which were part of the recall.[41]

Another reason that recalls may not be perceived as relevant is likely rooted in personal experience. Our research shows that only 59% of Americans say they have *ever* looked for a recalled food item and only 10% say they have *ever* found one. That only one-in-ten Americans has ever found a recalled food item is not entirely surprising. In relative terms, the amount of food subject to recall each year is simply a tiny fraction of all the food produced and consumed annually in the United States. Moreover, as will be discussed in a later section of this report, consumers often find it difficult to distinguish affected products from those that are not part of

a particular food recall. Regardless of the reason, the fact that most Americans lack any prior experience with recalled foods is likely to suppress their estimates of the likelihood that they will encounter them in the future.

An additional explanation is related to the large body of research that indicates that most people assume that compared to other people, they are less vulnerable to a wide variety of health and other problems. This phenomenon, known as "optimistic bias,"[42] holds true for food recalls as well. In our 2008 survey of consumers, a third of the participants demonstrated optimistic bias by reporting that they personally had a lower likelihood of having purchased a recalled food as compared to other Americans or others in their own state (38% and 35%, respectively).[5]

Public perceptions of both food recalls and foodborne illnesses may be prone to optimistic bias effects because most risk information communicated to the public is about risks to people in general. Individuals must then use this information to judge their own specific risk status. In doing so, people have a tendency to underestimate their own risks relative to others, creating a gap between their perceived risks and their actual risk status. As a result, people may ignore risk communications, assuming that the messages are aimed at other more vulnerable individuals.[43]

Unfortunately, overcoming optimistic bias has often proven to be remarkably difficult. Information-based interventions designed to help people develop more realistic expectations about the likelihood that they may be affected by particular health risks have often proven disappointingly unsuccessful.[44] However, such efforts are more likely to succeed if the risk information provided is clear, is perceived by an individual to be personally relevant, and when it is difficult (or impossible) for the individual to ignore the information, or to discount it through alternative counterfactual rationalizations.

The problem with many food recall communication efforts is that they typically fail in all of these tasks. Often, the information provided to consumers is ambiguous, especially when the recall is the result of a foodborne illness outbreak or when it involves complex trace-back or trace-forward procedures, as in the case of contaminated ingredients. The information may also not be seen as particularly relevant to people because they do not recognize that the particular brand of the product they have purchased is associated with a manufacturer's recall. They may also simply not remember having purchased a product they do recognize on the list of recalled items. Moreover, in the interim between hearing about a recall on the Television, reading about it in a newspaper, or on the internet, and being in a position (having the time, being in the right place) where they can take action, it may also be easy for an individual to forget or ignore the recall information they receive. It is also possible for consumers to rationalize that given the vast number of food products on store shelves, and the very large

number of stores that sell food around the country, there is a small likelihood that they had purchased one of the products included in the recall.

Where possible, messages delivered at the retail level, designed to let consumers know that the recalled products were sold in the places they shop, are a good first step in increasing the personal relevance of a recall. For example, in-store efforts, including shelf tags alerting customers to the fact that particular lots of the product have been recalled and including identifying information would also be useful.

Personalized Messaging

Where practical, providing personalized recall messages to consumers regarding their previous purchases is likely to be one of the best ways to overcome these problems. Some companies, such as Costco and Kroger, are already providing this service to their customers. Using mailed letters (Costco) and messages on the bottom of receipts (Kroger), they communicate with their members and loyalty card users to let them know when something they've purchased previously in their store has been recalled. While there are costs involved for the companies, our research indicates that consumers are very receptive to this concept overall. In particular, 73% of Americans report that they would like to receive these messages on their receipts at the grocery store, and 65% and 64% would like to receive notification through email or postal mail, respectively. Fewer would like telephone calls or text messages (38% and 16%, respectively).

Recently, a company called ReachEverywhere developed a food recall application that works with their Shopper iPhone Shopping Assistant application.[45] This company will now use information from the FDA and USDA to let individuals know when an item that has been placed on their virtual shopping list has been recalled. As technology improves, it is likely that similar applications will be developed by other companies.

In sum, personalized messages based on previous purchases may become the standard for the industry, as more stores adopt the practice. However, where this is not practical, market segmentation and tailored recall messages are likely to enhance the ability to more effectively motivate consumers to respond appropriately.

Conveying Consequences

Even when people can be persuaded that a food recall is relevant to them, they still may not be motivated to take action to find and discard a recalled product because they are not convinced that consuming the product will harm them. Two of our national surveys included questions about eating food that respondents were told *not* to consume.[17,18] In both surveys, approximately 12% of Americans responded that they had eaten a food they thought had been recalled.

Who are these people, and what rationale do they give for eating the food they were told to avoid? We have found that those who do not work outside the home and those who are not white are more likely to say that they have knowingly eaten recalled foods in the past. Their rationales were also relatively consistent. The most common reason reported for eating recalled food is the belief that it will not hurt them. The next most common reasons given were the belief that the media or government had exaggerated the risk and that the stores would not sell unsafe food. The fourth most common reason given was that the individual had done something to food that they believed had made it safe, such as washing or cooking it.

Unfortunately, the simple act of disregarding a warning and eating a recalled food without becoming ill can be a self-reinforcing behavior. Doing so, without recognizing any apparent health consequence, is likely to weaken interest in future warnings and could make the individual more likely to engage in this behavior again in the future.

In contrast to the 12% of Americans who reported that they had eaten a food they thought had been recalled, only 9 individuals, out of 1,101 respondents (<1%), thought they had been made ill by a recalled food product; and of these, only 4 had been diagnosed by a doctor. Yet, 11% of the same respondents reported that they "know someone who has been made sick from *recalled* food." Again reflecting optimistic bias, most Americans do not believe that *they* have ever been made ill by a recalled food product; yet, more than one-in-ten appears convinced that they know someone else who has been affected.

Educate Americans about foodborne illness

Optimistic bias is often introduced when people estimate their future susceptibility to a health risk based on their own prior experiences.[46] For example, in a case-control study, people who had recently experienced salmonellosis rated their personal risk from foodborne illness as higher than controls, suggesting that personal experience of food poisoning can reduce optimistic bias.[47] Unfortunately, we have found that only 9% of Americans believe that they know a lot about the symptoms of Salmonella infection.[18]

In fact, people generally underestimate the incidence of foodborne illness overall,[48] and are unable to identify groups of people particularly at risk for foodborne illness.[49] Moreover, because they cannot identify its symptoms, most Americans do not recognize foodborne illness when they personally experience it.

When thinking about the symptoms of foodborne illness, people tend to focus on gastrointestinal upset, ignoring fever and other signs of illness. They also believe that the symptoms of foodborne illnesses typically occur within a day after eating the contaminated food, failing to recognize that many foodborne illnesses have an incubation period longer than 24 hours. Therefore, they are unlikely to connect the consumption of contaminated food with

its consequences.[50] Moreover, even when they do recognize that they may have symptoms of a foodborne illness, they are unlikely to correctly identify the food item that may have been the cause.[51]

As a result, despite estimates that foodborne diseases cause 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths in the United States each year, few Americans report having had direct experience with it. In fact, while the statistics suggests that nearly every American has experienced symptoms of a foodborne infection multiple times, only 18% of the respondents in our 2008 study reported that they had *ever* been made sick as the result of eating contaminated food. Of those, about one-third (37%) reported that a doctor had confirmed the diagnosis (only 7% of the total sample).[5]

This is consistent with research that suggests that even many of those who *suspect* they are suffering from foodborne illness do not see their doctors.[52] Therefore, their cases are unlikely to come to the attention of health authorities. Indeed, research suggest that for every reported case of foodborne illness, as many as 30 times more cases go unreported, often with victims unaware of what caused their illness.[53] Unfortunately, underreporting of foodborne illness can be a barrier to identifying outbreaks, and official tallies of such illnesses are likely to significantly underestimate the true rates of infection and their associated burdens and costs within the population.

Educating consumers about the symptoms of foodborne illness may help them recognize the connections between poor food safety behaviors, contaminated food products, and their consequences. It may also encourage consumers to seek appropriate healthcare, which would also improve the recognition and tracking of foodborne illness outbreaks. As such, it is critically important to communicate information about the symptoms and consequences of the specific foodborne illness connected with the consumption of the recalled product. It is also important that such information is repeated consistently in all communications related to a specific recall or foodborne illness outbreak, and that this information is consistently communicated across recalls related to the same pathogen.

It is also clear that consumers want more information about the symptoms of foodborne illness to be included as part of food recall notices. When we asked people to rate the importance of a series of topics that could be covered in a media story regarding a food recall, the "illnesses and symptoms caused by eating the recalled product" was given the highest rating, and the second highest score was given to "whether anyone had become sick from eating the recalled food."[5]

A Problem with Language – Class I, II, III, Recall

One inherent problem with communicating the consequences of consuming contaminated food products that are subject to recall is that the current system which categorizes recalls into three

Classes (I, II, III) does not carry any inherent meaning for consumers. While the FDA and USDA have slightly different definitions for what constitutes each of the three recall classes, the systems used by both agencies are based on the relative health risks posed by the product involved. A Class I recall is considered to be the most serious, reflecting the potential for consumption of the product to cause significant injury or death. A Class II recall is issued for products that are considered to have a lower chance of causing adverse health consequences. A Class III recall typically involves products where there is little or no chance of adverse health consequences.

The problem is that without additional explanation, the designation of a Class I recall does not *by itself* imply a particular level of seriousness or a required set of actions on the part of consumers. In fact, people unfamiliar with this system may misinterpret the directionality of the three classes of recalls and interpret a Class III recall as being more serious than a Class I recall. Given this, communications related to Class I recalls should indicate that such recalls are considered to be the most serious by the FDA (or USDA).

A Problem with Language – A Voluntary Recall

In our 2008 study of American consumer responses to food recalls, we found that only 9% of the public knew that the Federal government does not have mandatory food recall authority. In fact, the federal agencies responsible for food safety cannot order companies to carry out recalls of their food products. The sole exception is the FDA's authority to require a recall of infant formula.[54] Yet, the majority of the public appears to believe that under U.S. law, the government can force any food company to recall a contaminated product. As a result of this misperception, when announcements of recalls of food products emphasize that they are "voluntary," the public may judge that they are not particularly serious, believing that if they *were* serious, the government would *force* the company recall their product.

Accentuating Identifying Information

Once consumers are made aware of a food recall, are convinced that it is personally relevant, and are persuaded that the consequences are worth taking action to avoid, they must also be able to identify the affected products. Unfortunately, foodborne pathogens are invisible so it is not possible to identify contaminated products simply by looking at them and, contrary to the beliefs of many consumers, they also cannot be reliably detected using the sense of smell or taste either. What is generally not understood is that the bacteria that cause food to spoil are not the same as those that cause foodborne illness.

Spoilage bacteria such as *Pseudomonas*, *Xanthomonas*, and *Shewanella* species, lactic acid bacteria, spore-forming bacteria, *Enterobacteriaceae*, and others cause foods to deteriorate and to develop unpleasant odors, tastes, and textures.[55] Importantly, while spoilage bacteria can impact the quality of foods, they are unlikely to cause foodborne illnesses. Moreover, most

consumers are likely familiar with the bad tastes and smells they produce, and are therefore unlikely to eat products severely affected by spoilage bacteria.

In contrast, pathogenic bacteria including *Bacillus cereus, Campylobacter jejuni, Escherichia coli*, *Listeria monocytogenes*, *Salmonella*, and *Shigella,* and viruses such as *Hepatitis A,* Noroviruses, *Vibrio parahaemolyticus*, and *Vibrio vulnificus* are responsible for foodborne illnesses, but do not generally affect the taste, smell, or appearance of a food, and are therefore largely undetectable by the average consumer. In fact, consumers may be dangerously misled if they rely on the fetid tastes and odors indicative of spoilage bacteria to determine whether a food product is likely to make them ill. In truth, if the product smells bad or has an off flavor it may have been exposed to conditions conducive to the growth of both spoilage and pathogenic bacteria. Unfortunately, pathogenic bacteria may be present even in the absence of spoilage, making the "sniff-test" an unreliable indicator of food safety.

That foodborne pathogens are invisible means that consumers must trust others to tell them what is safe and what is not safe to eat. In addition, for consumers to act on this information, those products that are *not* safe to eat must be easily distinguishable from those that are wholesome. Given this, it is not surprising that when asked in an open-ended question what they would most want to know when they hear about a food recall, the most common response (given by over one-third of Americans) is that they would most want identifying information about the product. The second most common type of information desired is where the product is from; and third, where it was sold. Taken together, this indicates that the public wants to know how to determine if they have recalled food products in their homes.

However, people often have a difficult time distinguishing which products are included in a recall and which are not. Only 13% of Americans who have looked for a recalled food in their homes say that they used *specific* information to tell whether the food was recalled.[5] Most of them reported that they used lot or batch numbers, and a few respondents said that they used sell by dates. Unfortunately, not all consumer products carry readily interpretable information. In addition, the lot numbers, production codes, sell by, best by, and use by dates on products that do carry them are often in places that are not obvious to the consumer and are in type sizes and faces that are difficult to read. This is especially a problem for those who have vision difficulties, including the elderly.

The fact that consumers cannot readily identify recalled products or detect or verify contamination on their own makes it is easy for people to ignore recalls and consume potentially contaminated food. In contrast, it can also result in food waste as some people adopt a "better safe than sorry" strategy. Our survey research found that 28% of Americans say they have simply thrown out food as the result of a recall.[5] Similarly consumers avoid products that are like those that have been recalled and even other products made by a company that

has had a food recalled. This was particularly noteworthy during the spinach recall, when sales of bagged lettuce dropped by over 10%.[56]

Some companies are proactively informing the public when their product is *not* involved in a recall of a similar food. This can help a confused consumer to be more certain that what they are purchasing is safe. For example, after the recent Peanut Corporation of America (PCA) recall, some unaffected brands of peanut butter placed signs on the grocery store shelves with a photo of their product and text clearly stating that their particular brand was not affected by the PCA recall. This may be particularly effective at the point of purchase, given how hard it is for the consumer to remember which products (or container sizes, lot numbers, etc.) are affected by a given recall. In this particular case, there were more than 2,000 products affected,[57] making it impossible for any consumer to remember which specific products, lot numbers or date codes were involved.

Both USDA and FDA host websites with extensive Internet pages devoted to food recalls. In addition, the Federal government sponsors www.recalls.gov, a website covering all kinds of recalls, including those for food and other consumer products. In fact, about 15% of Americans say they have already visited a government website for information about food recalls.[5] However, the information on these websites is typically organized by date, providing links to press releases about recalls. As a result, for a consumer to find out whether a specific product in their household has been recalled, it is necessary to search through individual press releases to find the brand, lot number, UPC code, or other identifying information that would allow them to make a determination. In many respects, a consumer would already need to suspect that a product has been recalled before making the substantial effort to track down the information required to confirm it.

What is needed is a centralized searchable database including UPC codes, pictures of the products, and other essential identifying information about recalled foods. This would allow consumers, retailers, food banks, and other charitable organizations that distribute donated food to quickly determine whether a food product has been subject to a recent recall. If such a database were available, smartphone applications using UPC scanning technology could easily be developed to help consumers screen their household food items for recalled products.

In the interim, because many Americans find it difficult to identify which foods have been recalled, and because not all products carry readily interpretable information, where possible, providing personalized recall information makes sense. Letting people know directly when a food they've purchased has been recalled would, at minimum, help people know when they need to check their homes for a recalled food and could help guide them in finding the relevant products.

Compelling Appropriate Actions

When people feel as though they are at risk, they typically want to know how to reduce the threat. Prominent theories of health behavior have different names for this need for information, one calls it the "cue to action,"[58] while another says this is information needed for people in the "decided to act" stage of precaution adoption.[59]

More simply put, after finding a recalled food product, people want to know what to do with it. Not surprisingly, when asked to rate the importance of including information "about what should be done with recalled food" in media stories about food recalls, Americans gave a mean rating of 88 on a 0-100 scale, where 100 was "extremely important."[5]

Unfortunately, during both the spinach recall and the tomato/pepper warnings, after the initial media coverage, TV and newspaper stories tended to focus on the number of deaths and illnesses related to the outbreaks and the progress of the investigation. It *did not* focus on: what products were safe to eat, details concerning what was unsafe, symptoms of the foodborne illness, groups of people particularly at risk, or on providing practical information to consumers about how they could avoid becoming ill themselves. Thus, consumers were unlikely to read or hear "what to do."[21,60] Therefore, recall communications targeted both to the media and to consumers must consistently repeat and reinforce what should be done with the recalled products if they are found.

Moreover, efforts to provide specific advice concerning what should be done with a recalled product are important both because people *want* this information and because it appears to be *motivating* to consumers. A complex paired preference modeling technique was used to create a comparative ranking of 10 messages intended to motivate consumers to check their homes for a recalled food.[5] Consistent with psychological theory suggesting the importance of people's perceptions of the seriousness of the consequences in motivating their health behaviors, the most compelling message was that "A large number of people across the country have reportedly become ill from eating this food." The message ranked second was "The recalled product should be thrown in the garbage." The third was "One person in your town has reportedly become ill from eating this food." Ranked fourth was "The recalled products can be returned for a full refund." Fifth on the list was, "Washing will not make the food safe."

What this ranking implies is that consumers use the information about what should be done with the food product both as practical advice, and as an indicator of how serious the problem is. Thus, telling people that they need to throw out the recalled product may communicate both the appropriate action to be taken by consumers and that the problem with the product is serious enough to warrant doing so.

In this regard, food recall communications need to provide clear instructions about both what *should* be done with the recalled food product and what should *not* be done with it. Should the product be immediately discarded? If so, does it require any special handling? Can it be returned to the place of purchase for a refund? Can washing the product remove the contamination? What about cooking? The reason to be explicit about both what should and should not be done with a recalled food product is that our studies suggest that a portion of the public would prefer to try to render the food safe to eat by washing it or cooking it rather than "waste it" by discarding the product[17,18].

That people would do so is not surprising. Research suggests that many individuals, especially those who are food insecure, are often willing to acquire and consume discarded food, foods in dented cans or damaged containers, and foods older than their "use by" dates. They are also willing to engage in practices that increase food safety risks including removing spoiled sections, slime, mold, and insects from food, and eating other people's leftovers.[61,62] Anecdotal evidence also suggests that the more costly the food product involved, the more likely people are to engage in such behaviors.

However, economics is not the only explanation for why people might attempt to make food safe to consume rather than simply discard it. Standard food safety advice typically includes exhortations to "thoroughly wash" and "thoroughly cook" food products to make them safe to eat. It is not unreasonable for consumers to expect that this advice also applies to recalled food products. Where this is not the case, as with produce contaminated by *E. coli*, consumers need to be explicitly informed, and told *why* simple washing and cooking are inadequate measures to make the food safe to eat.

Reestablishing Consumer Confidence

Unlike many other health-related messages about food, recalls are generally limited in scope and in time. Most health behaviors, such as eating a healthy diet are touted as being important for the remainder of one's life. However, as described earlier, behaviors such as searching one's home for a potentially contaminated food, or avoiding a particular food during an outbreak investigation are behaviors that the public is encouraged to engage in for a limited time. Unfortunately, theories of health behavior do not consider how to *un-change* an individual's behavior. In other words, how can communications encourage an individual to revert back to an earlier mindset and behavior pattern?

As the public's faith in the American food system suffers as a result of a series high-profile foodborne illness outbreaks, it is more important than ever to let the public know when the causes of foodborne outbreaks have been identified, when steps have been taken to fix the problem, and when they can go back to consuming foods that had previously been removed from the market. The continued uncertainty that many people experience on the heels of a

recall or large scale outbreak can be devastating for the both sales of the product and consumer confidence.

To restore confidence, Americans need to be reassured that the problem that led to the recall has been fixed, and that it is safe to eat the product again. This is clearly in the financial interest of the company responsible for the recalled food. However, it may also be in the interest of public health agencies to help the public maintain vigilance about those threats that are current, and to be able to let down their guard regarding threats that are no longer active, in order to avoid fatigue from these messages.

Unfortunately, communicators cannot count on the mainstream media to cover the news of the resolution of the problem. Recent research shows that although the national broadcast television news shows covered the 2006 *E. coli* outbreak and the 2008 *Salmonella* Saintpaul outbreak repeatedly, once the investigations were resolved the story practically disappeared from the airwaves[63]. In addition, when the story was mentioned after the situation had been resolved, the news shows did not consistently reinforce the fact that the food was considered safe to eat. It is not surprising that the media does not cover the resolution of the recall as much as it covers the onset and developments of the investigation. The media does not view its role as educating the public, and it may simply be a natural outgrowth of the issue cycle in the way news is presented in the US.[64] Nonetheless, once the problem that led to the recall has been fixed, alerting consumers to the fact that a food product is safe to eat again is extremely important. Knowing that the media is unlikely to advance this message as part of its news coverage, the companies involved with the recall must make special efforts to reach the public on their own.

A Problem with Language – When is a Recall Over?

One of the challenges in communicating about food recalls is how to achieve closure. Clearly, the first step is to discover and solve the problems that caused the contamination. The second step is to assure the public that those problems will not resurface. However, the third step, convincing people that it is safe to eat the product again is much more difficult.

The key here is that once people are convinced that the recalled products are unsafe to eat, and have been encouraged to find them and destroy them, they understandably do not want to be exposed to them in the future. Theoretically, the only way to guarantee that consumers will not encounter such products would require completely recovering or destroying all of those that were affected by the contamination. The problem of course is that there is a real difference between recalls of perishable items with relatively short shelf lives, and non-perishable items in cans, jars, and packages that can remain in home food pantries for years.

In the case of perishable raw fruits and vegetables for example, after a sufficient period of time has passed, it is unlikely that any contaminated product would be available for consumers to consume. As a result, the cases of foodborne illness related to the product will ultimately disappear; permitting public health officials to declare that the outbreak is over and consumers can have confidence in resuming their consumption of the product.

For non-perishable items, closure is a bit more difficult. In practical terms, once a particular lot or production run of a non-perishable product is subject to a recall, it is never considered safe to consume those specific products. Indeed, because contaminated products do not become safer over time and because it just is not possible to account for every one of them that was sold, the recall of those specific products is never really over. In part, that is why food recall information continues to be archived on the FDA, USDA, and Recalls.gov websites. It also provides another excellent reason for the creation of a centralized searchable database of recalled food products.

While the recall of specific non-perishable foods is never really "over," once the problem that led to their contamination has been fixed, any new production of those same products should be as safe to eat as they were before the problem occurred. Of course, because consumers often have difficulty distinguishing affected products from unaffected products by sight, some other cues have to be created to help them realize that what is available for purchase is safe to eat. In some cases, especially involving co-packed products, manufacturers and retailers have simply chosen to drop the names of the brands of the products involved, replacing them with new labels.

However, this is clearly not practical for well-known national brands. Instead, some other indication that the "new" product is not the same as the "old" product has to be established either through targeted advertising or retail-level efforts such as shelf-tags or point-of-sale information.

Providing Context

One of the critical aspects of high-profile food recalls is that they become "signal events" leading consumers, editorial writers, pundits, bloggers, and politicians to try to interpret what each new recall in a series means in terms of the safety of the American food supply. The problem is that most Americans know very little about either agriculture or food production, and even fewer have any personal experience with it. Fewer than 2% of Americans live on a farm, and only 17% of Americans now live in rural areas.[65] The level of Americans' knowledge about our food system is commensurate with that lack of exposure.

Paradoxically, media coverage of food recalls, foodborne illness outbreak investigations, and product trace-back investigations are providing an opportunity for average citizens to learn

about the American food system through examples of failures in that system. As such, they are likely to come away with skewed views of how the system normally (and successfully) works.

Further, not understanding how the food system works can lead to confusion when individuals are trying to understand food recalls and how or why they happen. For example, the 2006 *E. coli* outbreak in spinach was the result of contamination in one processing plant on one day.[66] However, when asked about this, only 20% of Americans said that they had heard that this was so. Moreover, whether they had heard about it or not, only a third (33%) said that they believed that this was true.[17]

This is not entirely surprising. If the public does not understand that during such processing, the leaves from many different spinach plants, and even from different farms, are washed and bagged together, then packaged under multiple brand names, it is hard for them to understand how contaminated wash water could lead to a massive nationwide recall of fresh spinach products.

The important lesson is that in addition to providing essential information required to alert and motivate people to look for recalled products, effective food recall communications need to also provide people with context to help them understand how the food system works, and what led to the need for a recall. In doing so, it is possible to both help people understand how the problem can be convincingly solved, and whether the failure that led to the contamination is a localized problem that can be fixed by an individual company, or a more systemic failure requiring larger efforts to provide solutions. As such, the interpretation of the meaning of these recalls can be less speculative.

Conclusions

This paper was designed to provide guidance for communicators about food recalls and foodborne illness outbreaks with a wide range of responsibilities, including those in industry and government. It does so recognizing that communications about food recalls are different than other kinds of health communications. It also recognizes that improvements in outbreak surveillance and our technical abilities to identify outbreak strains of pathogens is likely to lead to more warnings, advisories, and recalls. As a result, getting the communications right will be more essential than ever.

Wherever possible, the recommendations provided here are based on empirical data. Unfortunately, the systematic study of effective recall communications is in its infancy. We have therefore tried to provide guidance within a framework rooted in the psychology of health behaviors and behavior change. Underscoring the recommendations is the realization that simply telling people about a food recall is often not enough to motivate them to look for and discard recalled products. Instead, getting people to take action requires that they are aware of

the recall, believe it applies to them, believe that the consequences are serious enough to warrant action, can identify the affected products, and believe that discarding (or returning) the product is both necessary and sufficient to resolve the problem. The framework also recognizes that getting people motivated to take action is only the first responsibility of food recall communications. Once the problem that led to the recall has been properly solved, consumers must also receive the message that the products are safe again to eat.

Therefore, recommendations concerning improving awareness, increasing relevance, conveying consequences, accentuating identifying information, compelling appropriate actions and reestablishing consumer confidence are each discussed. The key is understanding that each is a necessary component of successful food recall communications. By following the guidance in this report, we hope to help communicators maximize the number of people who get their messages about food recalls, as well as increase the likelihood that the public will take appropriate precautionary behaviors and perform them successfully, without losing confidence in the food supply.

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