

**ABSTRACT**

In the last six years, there have been calls for change to the United States (US) food recall system. These calls highlight the need for:

1. Change in federal oversight
2. Better use and management of data
3. More effective food recall communication to the US public

This paper presents recent responses to these calls for change, both from the food industry and government. The authors suggest that the majority of reform and change has focused on federal oversight and improved data tracking, while neglecting to explore ways of communicating food recalls more effectively to the public.

The paper answers the questions:

1. Are there specific ways that the communication of food recalls might be improved?
2. Where and how do consumers prefer to receive food recall information?
3. Who do consumers trust to deliver food recall information?

The extant literature suggests that making information about recalls more accessible to the public might help consumers make more informed decisions during food recalls. The results of two consumer surveys suggest that consumers prefer to receive information at the point of purchase, and that they trust existing federal agencies --the US Department of Agriculture (USDA) and the US Food and Drug Administration (FDA) -- to deliver that information. We suggest that an in-store, point-of-purchase communication system should be explored through different stages of design exploration and testing – allowing for continued consumer input.

Key Words: Food recalls, human-centered, exploratory research, communication design

Citation: Clinton C. Carlson and Whitney O. Peake(2013). Rethinking Food Recall Communications for Consumers, *Iridescent: Icoграда Journal of Design Research*, 3(3).

---

**FULL PAPER**

**Introduction**

This research project explores the US food recall system. It highlights recent changes in the system and posits that communication design is well suited to explore how new technology, industry standardization, and stronger federal oversight could be brought together to redesign food recall communication strategies – potentially creating a safer recall

system, more confident consumers, and reduce waste and illegitimate economic losses during recalls. This paper reviews the background to the current recall system, poses several questions about consumer experiences and desires, reviews current literature and reports results of two surveys designed to uncover directions for further exploration.

### **Problem Statement**

Food safety impacts millions of Americans annually. In 2011, the Centers for Disease Control and Prevention estimated that for the 1 in 6 US residents who become ill from a foodborne disease annually, approximately 128,000 are hospitalized and 3,000 die. According to RASMAS (a recall tracking service), food recalls consistently make up the largest product recall category in the US (2010).

Two government agencies oversee the US food recall system – the USDA and the FDA. Both agencies primarily rely on press releases, online postings, and email recall alerts to notify the public about food recalls (GAO, 2004:9). In addition, both agencies call for companies to issue recalls through their distribution network. Outside of these efforts, food recall efforts rely heavily on the media to communicate with consumers.

### Calls for federal reform

In 2004, the US Government Accountability Office (GAO) delivered a report to Congressional requestors, which overviewed food safety issues. The report suggested that the FDA and USDA take steps to address the following weaknesses:

1. Lack of response time for company actions when food is determined to be unsafe
2. Ineffective use of data systems to monitor and manage recalls
3. A verification system that does not ensure the timeliness and completeness of a recall
4. Ineffective consumer notification

The report also suggested that Congress consider legislation that would:

1. Require companies to notify the FDA or USDA of unsafe food
2. Give the USDA and FDA authority to mandate recalls, establish requirements, and levy financial penalties, fines, or imprisonment for failure to follow requirements

Many of the same shortcomings and recommendations are reflected in food industry articles. In 2007 Matthew Enis cites industry and consumer support for a stronger FDA (Supermarket News). In an interview with Chris Waldrop, Director of the Food Policy Institute at the Consumer Federation of America, Waldrop expresses support in giving the FDA the authority to mandate recalls.

Kinsey, et al. (2009) notes that public trust in the FDA and USDA has steadily decreased since the early 2000's. This is a concern as Onyango, et al.'s (2008) review of the 2006 spinach recall indicate a link between the public sense of food security with public confidence and trust in both institutions; and they suggest that there is a need for the FDA and USDA

to build greater consumer trust.

#### Federal response

In 2009, President Obama created the Food Safety Working Group. Then, in 2011, he signed into law the FDA Food Safety Modernization Act that gives the FDA the ability to mandate and require comprehensive, prevention-based controls for the food industry – including the authority to require a company to recall a product. One of its goals is to hold food producers and processors accountable. The act also initiated reforms to improve tracking of food products, standardize data collection, and initiate a pilot project to evaluate methods within the FDA.

#### Calls for food industry change

The need for change isn't isolated to government reform. The 2004 GAO report illustrates the need for better industry information sharing by reviewing the 2003 outbreak of mad cow disease. The report describes how the USDA could not efficiently track contaminated beef because of slow responses, imprecise lists, and poor record-keeping practices among producers, distributors, and retailers (GAO, 2004: 40-41).

In 2010, a report generated for the Produce Safety Project at Georgetown University made six specific recommendations for reforming US food safety policy and procedures. These recommendations included improving “the effectiveness of trace-back and trace-forward data for outbreak response” (Batz & Morris, 2010: 9). In a 2003 article Linus Opara discussed the emerging need for “accurate and timely traceability of products” and suggested that the growth in global food sources, an increase in food safety issues, and increasing concern over genetically modified organisms are driving this need (101). The GAO also cited the dispersion of a product and its potential changes in packaging as a factor that complicates recalls (2004).

#### Industry response

GS1 serves as the non-profit international supply chain standards organization. In 2009, the GS1 worked with the Food Marketing Institute and the Grocery Manufacturers Association to develop a national subscription-based, real-time product recall notification system that efficiently tracks products. The work of this organization allows producers to track their entire supply chain and achieve more efficient recalls, communications, and meet requirements of the FDA Food Modernization Act (2).

#### Calls for change in communication strategy

The 2004 GAO congressional report highlights the need for improved communication with the public during recalls and for alternative communication methods. Specifically, GAO recommends that grocery stores post notices in their store and communicate directly with consumers through club membership lists. The Produce Safety Project report also highlighted the need for improved transparency and public participation. The report recommended the FDA and the USDA bridge the gap between science and public perception through “education and more explanation” (Batz and Morris, 2010).

A 2010 paper from the Department of Health Policy and Management at Harvard calls for new channels of communication that require minimal consumer effort (Steelfisher, Weldon, Benson, & Blendon). A report from the Food Policy Institute at Rutgers University reinforced this call, showing that almost 40% of Americans say they would be interested in receiving email alerts for food recalls, but only 6% actually utilize the existing service (Hallman, et al., 2009: iii). In addition, Steelfisher, et al. (2010) called for clearer, more actionable information and policies that would assure information gets to ethnically-underrepresented groups. In a review of US recall policies, Patti Waller and Denis Stearns highlight the need for recalls that communicate in the location where recalled products were initially sold (2006). Public interest groups like the Center for Science in the Public Interest and the Consumer Federation of America, support these sentiments, suggesting that recall information should be highly visible in the stores that sell recalled products (GAO, 2004).

Hallman, et al. (2009) found that most US residents believe recall information to be extremely important, but few utilize existing resources to gain specific information to make informed decisions on recalled products. The Center for Science in the Public Interest and the Consumer Federation of America highlight the inadequacy of press releases to deliver specific enough information (as quoted in GAO, 2004, p 24). For instance, during the 2006 spinach recall, there was confusion among consumers, even though the recall received national media coverage. Considering that most recalls receive very little media coverage, this is of concern. The 2006 recall reinforced that US consumers were interested in the recall, but were passive toward obtaining more information (Cuite et al., 2007).

The lack of clarity and/or media coverage when recalls are lifted is also a concern (Cuite et al. 2007). Recalls often include a variety of unrelated products with the same tainted ingredient; or packaging that changes throughout the supply chain (GAO 2004). In a 2008 survey, 55% of respondents were aware of a specific peanut butter recall. Of those, 70% were aware that peanut butter crackers were included in the recall, but fewer than 50% knew that snack bars, cakes, brownies, cookies, and ice creams were also recalled. One fourth mistakenly believed that national brands of peanut butter were included in the recall (Steelfisher, et al., 2012).

Federal and industry changes have focused on oversight and logistics, while visible efforts to improve the way information is delivered to the public have largely gone unaddressed. We posit that communication design can assist in discovering and implementing consumer preferences for the form and content of future food recalls.

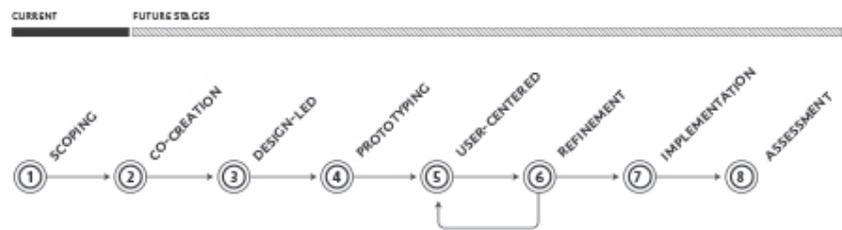
This project focuses on improving food recall communication strategies that build on prior research; we expect to provide additional insight on communicating recalls, consumer preferences for information sources, and consumer trust in sources of information. Our questions are:

1. Are there specific ways that the communication of food recalls might be improved?
2. Where do consumers prefer to receive food recall information?
3. Who do consumers trust to deliver food recall information?

## Methodology

This paper presents the findings of the scoping stage of the methodology in Figure 1 and provides recommendations for the future stages.

Figure 1 Research Plan (Influenced by Sless, 2008 and Liem and Sanders, 2011)



The scoping stage defines the initial directions and boundaries of the project. In the scoping stage we undertook further literature review, thus identifying opportunities to improve on the current food recall system's communication strategies. We then utilized two consumer surveys to confirm that those opportunities resonated with the public.

### Literature Review

Hallman and Cuite (2009) provide guidance for improving food recall communications with consumers. They suggest:

1. Partnering with major retailers may be a next step in rethinking food recall communication to the public
2. Displaying signs at the point of sale and placing recall information on receipts or coupons.

Hallman et al. (2009) report that although most Americans perceive food recalls to be an important issue, pay attention to recalls, and notify others about their parameters, they have very little overall knowledge about food recalls. Additionally, less than two-thirds of the individuals surveyed indicated that they had sought out recalled food in their home. Hallman et al. (2009) also revealed that when faced with several options for obtaining food recall information (on their receipt, in an email, via text message), 73% of consumers indicated they would prefer to receive the information on their receipt.

The recommendations of these articles, along with the apparent desire for a new way of receiving recall information (on the receipt) indicate that the landscape of communicating recalls has changed and deserves to be looked at in greater detail.

### **Analysis of Data**

To further understand potential changes to recall communication strategies and to gauge the public's receptiveness to new ways of communicating food recalls this project deployed two consumer surveys.

An initial survey was designed to give quick feedback about how a key consumer group (millennials) would answer:

1. How would consumers prefer to receive food recall information?
2. From whom would consumers prefer food recall information to come?

A follow-up, slightly modified survey utilized a peer recruitment

technique to recruit a broader age range of respondents through Facebook. This survey incorporated additional questions, which provide further insight into how food recall communications might be improved. It also allowed researchers to confirm results from the initial survey.

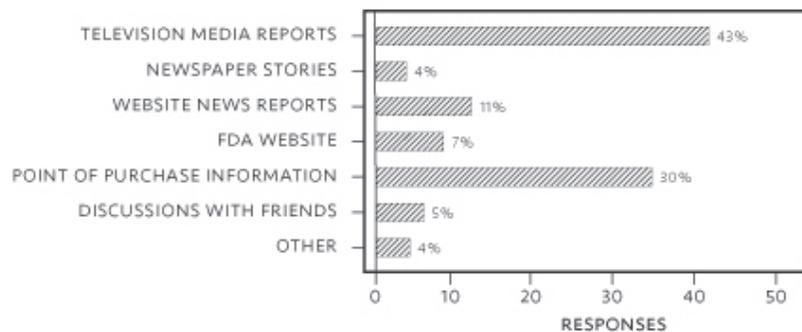
#### Initial survey

The initial Qualtrics survey consisted of thirty questions. A total of 56 people participated in the survey in April of 2012. The participants were recruited through classes at two university campuses. Participants were offered extra credit in their courses for participating in the survey. To ensure that bias was not introduced, an alternate extra credit assignment was offered for those choosing not to take part in the survey.

#### *Participants*

The participants were primarily single (80%), with slightly more than half (56%) indicating they were Caucasian, Non-Hispanic. Half of the participants had an annual income between \$17,401 and \$70,700; with 66% indicating that they were the primary purchaser of food in their household. Just over half of the participants were male (54%).

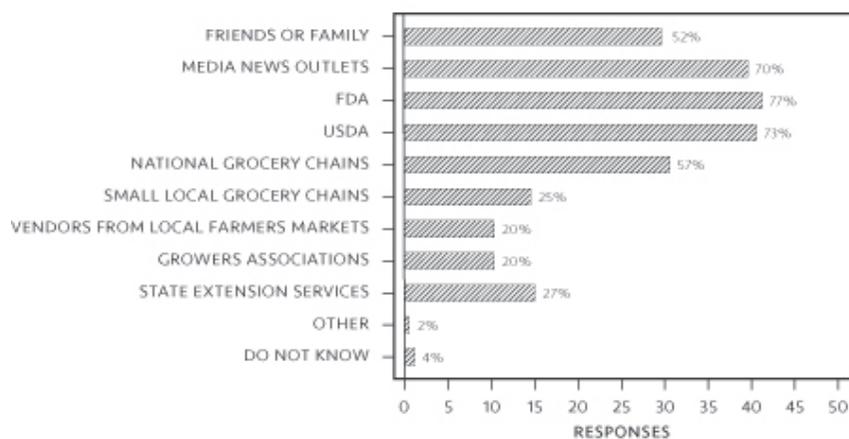
Figure 2 Consumer Preference For Receiving Recall Information



#### *Question 1: Desired means of getting food recall information*

We asked respondents: How would you prefer to hear about food recalls? The intent was to compare consumer's preference for receiving recall information in comparison to how consumers currently receive recall information. As Figure 2 shows television reports and point of purchase were nearly three times more likely to be chosen than any of the other options. This supports the hypothesis of Hallman et al. (2008:6) that "communicating about food recalls while consumers are thinking about food may be an effective way to increase public awareness." However, it also raises the question of, if given a choice between various locations in a shopping environment, which would millennials prefer?

Figure 3 Consumer Trust in Various Food Recall Stakeholders



### *Question 2: Most trustworthy source for food recall information*

We asked respondents: Which of the following entities would you trust for information about food recalls? Respondents were asked to check all that applied. The results in Figure 3 revealed that the FDA, USDA, and media/news outlets were slightly more trusted than large grocery chains and friends or family. Though this doesn't provide a definitive answer to the question, it does suggest that if it was apparent that recall information came from the FDA or USDA it might increase consumer confidence. It is also possible that an increase in visibility of the FDA and USDA might also build a higher level of trust in the US food recall system over time.

### Follow-up Survey

The follow-up Qualtrics survey consisted of 35 questions. A total of 218 people participated in the survey in August and September of 2012. The respondents were recruited through Facebook postings and distributed through existing online networks of friends. They were not offered any incentive to participate.

### *Participants*

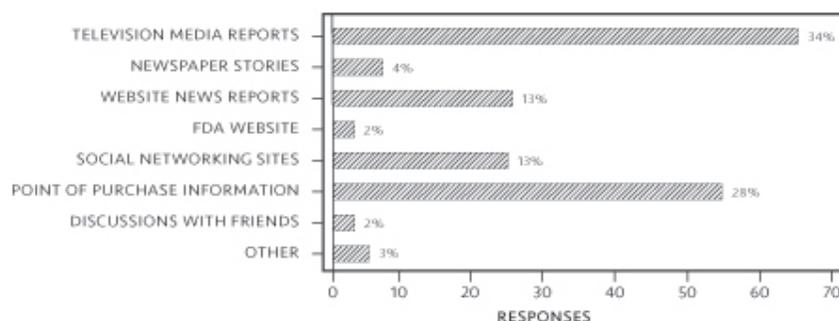
Respondents were primarily married (69%), with a majority (81%) indicating they were Caucasian, Non-Hispanic. Approximately 42% of the participants had an annual income between \$70,700 and \$142,700, with 81% indicating that they were the primary purchaser of food in their household. Nearly three-quarters of the participants were female (74%). In contrast to the initial survey, this group represented a more geographically diverse, older demographic that was less ethnically diverse and had higher annual income. The participants were also primarily female and married.

### *Question 1: Desired means of getting food recall information*

We posed the same question from the initial survey: How would you prefer to hear about food recalls? However, we added social networking sites (e.g. Facebook, LinkedIn, etc.) to the options. We also re-worded the previous choice "Point of purchase information (such as at the grocery store)" to read, "In the grocery store where you purchase your food." We felt that this might be clearer to the general public who might not

Figure 4 Consumer Preference for Receiving Recall Information

understand the term “point of purchase”. Respondents were directed to select only the one they most preferred.

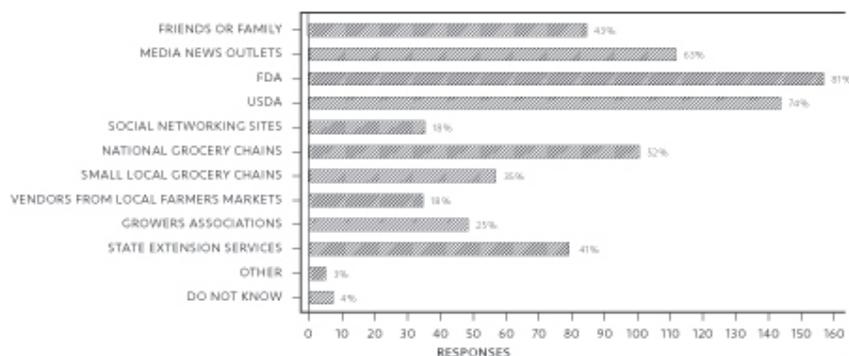


The results in Figure 4 look very similar to the initial survey. Television and media reports were preferred by 34% of respondents, in-store 28%, and online news sources 13%. In addition, social networks were preferred by 13% of the respondents.

*Question 2: Most trustworthy source for food recall information*

This question added social networking sites (e.g. Facebook, LinkedIn, etc.) as options to the original question. Respondents were encouraged to select all sources in which they place trust. As Figure 5 shows, the order of the top five most trusted entities remained the same as in the initial survey, with the FDA, USDA, and major news outlets being the most trusted. Interestingly, social networks scored quite low with 18% of respondents suggesting that it was a reliable source for information on food recalls.

Figure 5 Consumer Trust in Various Food Recall Stakeholders

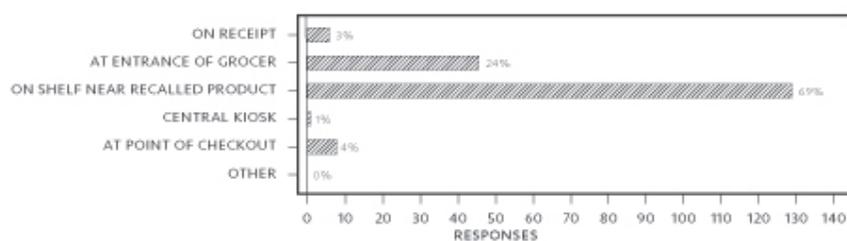


*Additional question: Desired in-store location of food recall information*

To better understand specifically where consumers would like to receive food recall information in stores, we asked: If information about current food recalls was available in grocery stores, in which of the following locations would you like to find food recall information. Figure 6 shows the options.

Of the respondents, 69% preferred to find food recall information on the shelf or near where the product was purchased. The next highest choice was at the store chains entrance (24%). Interestingly, when given other in-store options, few people (3%) preferred to receive recall information on their receipt. Whereas in Hallman, et al. (2008), the receipt was chosen 73% of the time when compared to other traditional means of

Figure 6 Preference For In-Store Recall Information Location



These two consumer surveys suggest that the public would find new methods for communicating food recalls helpful. Specifically, both surveys confirmed previous research suggesting that in-store information would be one of the methods preferred by consumers. However, when given options beyond receiving recall information on the store receipt consumers preferred to receive recall information at the point of purchase (e.g. store shelf, freezer, produce isle, etc.) nearly three times as much as any other in-store location, and over twenty times that of the receipt.

The surveys also suggested that federal agencies were the most trusted source of recall information. This may be important in considering new models of communicating recalls. For instance online social networks appeared to lack the trust of the public, indicating that efforts to utilize these networks should consider ways to develop a greater sense of trust.

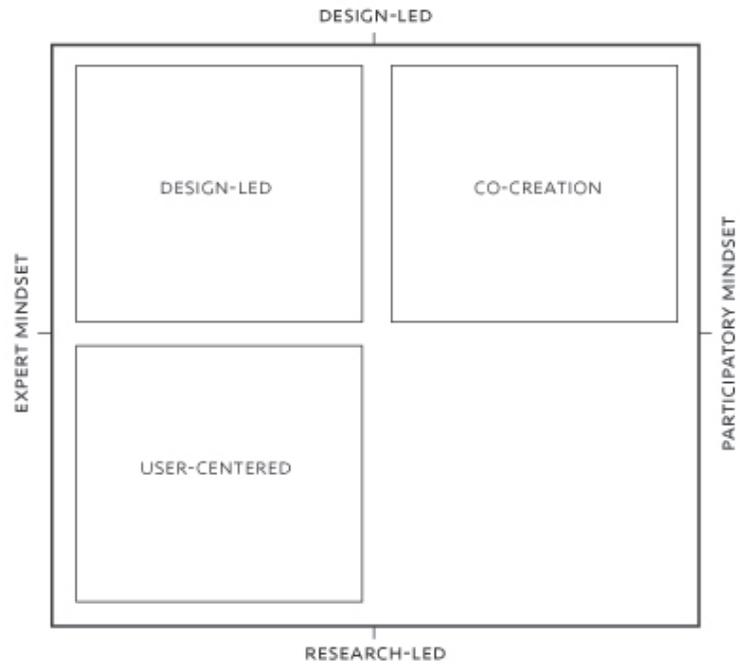
### Conclusion

Changes in the FDA, the food industry, society, and technology have altered the landscape of food recalls. Two consumer surveys confirmed previous research suggesting one of the most preferred methods of receiving recall information is inside the store or retail setting. Further data suggests that consumers prefer to receive recall information at the point of purchase (e.g. store shelf, freezer, produce isle, etc.) – nearly three times that of other in-store locations. The surveys also suggested that federal agencies were the most trusted source of recall information. This may be important in considering new models of communicating recalls. For instance online social networks appeared to lack the trust of the public, indicating that any efforts to utilize these networks should consider ways to develop a greater sense of trust or reliability.

### Next steps

Changing the way recall information is communicated to the public is a broad undertaking. It is believed that a diverse research plan like the one in Figure 1 will allow for the evolution and feedback necessary to envision new ways of communicating food recalls. The methods are derived in part from André Liem and Elizabeth Sanders' Framework For Positioning the Three Perspectives on Non-Technologically Driven Product Development Processes (2011) depicted in Figure 7.

Figure 7 Framework for Positioning the Three Perspectives on Non-Technologically Driven Product Development Processes (Liem and Sanders, 2011)

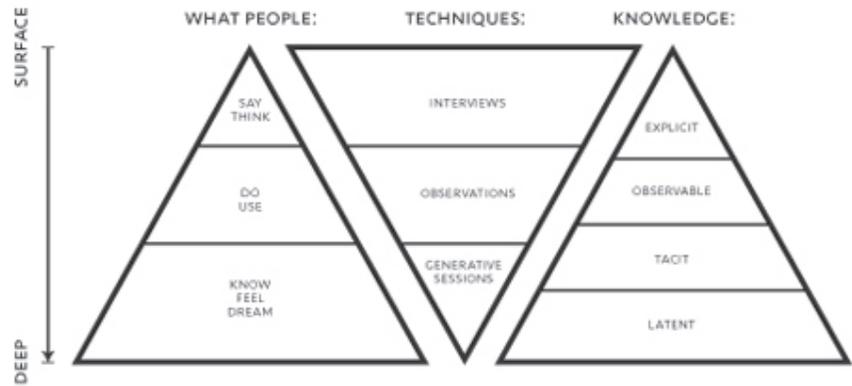


Progressing counter-clockwise from the upper right quadrant of Liem and Sanders' framework, the project includes the public in the early stages of design exploration through methods found in the "Co-Creation" quadrant. The next stage of the design process will give designers more control through critical design methods found in the "Design-Led" quadrant. Initial prototypes will then be tested with users through methods found in the "User-Centered" quadrant of Liem and Sanders' framework.

## 2. Co-Creation Stage

Visser, et al. (2008) and others have advocated co-creative design methods in the development of new products. Visser, et al. (2008) suggest that traditional methods of studying users (interviews, observation, and focus groups) reveal little useful information in the design of future products. The authors suggest, "For learning about potential future experiences, we need to include peoples' dreams and fears, their aspirations and ideas" (122). They cite Sanders' earlier work (1992, 2001) with generative techniques as a way to gain insight into the tacit and latent knowledge of users and present the diagram in Figure 7 that illustrates the value of generative design methods in giving depth to the understanding of constructs. Sanders states, "The biggest opportunity for improving the quality of products that we design today is to practice collective creativity with 'users'" (2001: 2). She quotes architect Christopher Alexander in the same article, "People need and have a right to determine and shape their own environment... They are the only ones who know in a profound way what they need" (2001:2). In a later piece, Sanders and George Simons (2009) also suggest that the earlier co-creative approaches are implemented in the design process the more impact they have.

Figure 8 Contextmapping: Experiences From Practice, (Visser, et al., 2008).



The Co-Creation stage of this project will involve working with consumers in a series of generative workshops. In the workshops, participants will be asked to map their consumption of food and media, consider their shopping patterns and existing information systems to envision both realistic and absurd ways of communicating food recalls to consumers.

### 3. Design-Led Stage

In his exploration of critical design methods, Simon Bowen suggests that working with the public to reflect on critical artifacts is an effective way of gaining insight into “social and physical” design contexts (2009:441/3). Bowen states, “Stakeholders’ responses to direct questioning strategies tended to be limited by their current experiences and they had difficulty engaging usefully with novel product ideas. However when critical artifacts were presented for stakeholders’ evaluation, the ensuing discussions usefully informed the understanding of the designer participating in those discussions.” The use of critical design methods will enable designers to respond to feedback from the Co-Creation stage of the project, and allow them to lead the exploration of new food recall communication methods, without neglecting consumer input and feedback.

The Critical Design stage of this project will involve a series of reflective workshops that engage designers and participants in discussing progressively more relevant artifacts that might be of value in understanding how to better communicate food recalls.

### 4. Prototyping Stage

The Co-Creation and Design-Led stages will inform the design of prototypes that will be tested for specific performance issues during the user testing stages.

### 5. User-Centered Stage

User-centered testing will allow designers to establish benchmarks for specific aspects or features that might assist or hinder in the communication of food recalls. For instance, a scanning feature may allow consumers to check that products are not included in any current recalls. User testing may help determine if such a feature would increase

consumer confidence and understand if the feature should be considered.

#### 6. Refinement Stage

The results of user-centered testing will inform the iterative design of prototypes that will be tested through further user-centered testing and comparison to the initial benchmarks.

#### 7. Implementation Stage

Testing of the final prototype design in a retail setting through limited implementation would allow for collection of real-world testing of the outcomes of a new food recall communication system.

#### 8. Evaluation Stage

Evaluation of data from the Implementation Stage may shed light on how the recall communication system affects cognitive, behavioral, and financial factors.

These stages could help document the value of a redesigned food recall system to food producers, processors, and retailers and could help envision what a future food recall communication system might look like.

---

#### References

- Batz, M., Morris Jr., J. G. 2010. Building the Science Foundation Of a Modern Food Safety System: Lessons From Denmark, the Netherlands, and the United Kingdom on Creating a More Coordinated and Integrated Approach to Food Safety Information. Product Safety Project, Georgetown University. Retrieved February 5, 2012 from: [http://www.producesafetyproject.org/admin/reports/files/Building\\_the\\_Science.pdf](http://www.producesafetyproject.org/admin/reports/files/Building_the_Science.pdf)
- Bowen, Simon. 2009. Getting it Right: Lessons Learned in Applying a Critical Artefact Approach. In: Undisciplined! Design Research Society Conference 2008, Sheffield Hallam University, Sheffield, UK, 16-19 July 2008.
- Cuite, C. L., Condry, S.C., Nucci, M. L., Hallman, W.K. 2007. Public Response to the Contaminated Spinach Recall of 2006. Food Policy Institute, Rutgers University. Publication number RR-0107-013.
- Enis, M. 2007. Lack of Oversight. Supermarket News, 55, No. 42: 70-71, October 15.
- GAO, 2004a. Food Safety: USDA and FDA Need to Better Ensure Prompt and Complete Recalls of Potentially Unsafe Food. United States Government Accountability Office.
- GS1, 2012. Rapid Recall Exchange: Do Your Part For Consumer Safety. Retrieved May 28, 2012 from: <http://www.rapidrecallexchange.org/LinkClick.aspx?fileticket=B8Ufl%2fDhFGc%3d&tabid=56>.
- Hallman, W.K., Cuite, C.L. 2009. Food Recalls and the American Public: Improving Communications. Food Policy Institute, Rutgers University. FPI publication number RR-0310-020.
- Hallman, W.K., Cuite, C.L., and Hooker, N.H. 2009. Consumer responses to food recalls: 2008 national survey report. Food Policy Institute, Rutgers University. FPI publication number RR-0109-018.
- Jonsson, S., Greve, H.R., and Fujiwara-Greve, T. 2009. Undeserved loss: The spread of legitimacy loss to innocent organizations in response to reported corporate deviance. Administrative Science Quarterly. 54, 195-228.
- Kinsey, J., Harrison, R. W., Degeneffe, D., Ferreira, G., Shiratori, S. 2009. Index of Consumer Confidence in the Safety of the United States Food System. American Journal of Agricultural Economics. 91, No. 5: 1470-1476.
- Onyango, B., Miljkovic, D., Hallman, W., Nganje, W., Condry, S., Cuite, C. 2008. Food Recalls and Food Safety Perceptions: The September 2006 Spinach Recall Case. Journal of Agribusiness, 26, 1: 77-98, Spring.

- Opara, L. U. 2003. Traceability in agriculture and food supply chain: A review of basic concepts, technological implications, and future prospects. *Food, Agriculture and Environment*. 1: 101-106.
- RASMAS, 2010. 2010 Healthcare Recalls Surge Over 15 Percent. Retrieved February 5, 2012 from: <http://info.rasmas.noblis.org/?p=4290>
- Roberts, M. T. 2004. Mandatory Recall Authority: A Sensible and Minimalist Approach to Improving Food Safety. *Bepress Legal Series*. Retrieved June 5, 2012 from: <http://law.bepress.com/expresso/eps/258>.
- Sanders, E. B-N. 2001. Collective Creativity. *LOOP: AIGA Journal of Interaction Design Education*. No. 3: 1-6, August. Retrieved June 5, 2012 from: [http://www.maketools.com/articles-papers/CollectiveCreativity\\_Sanders\\_01.pdf](http://www.maketools.com/articles-papers/CollectiveCreativity_Sanders_01.pdf)
- Sanders, E.B-N., Stappers, P. J. 2008. Co-Creation and the New Landscapes of Design. Retrieved May, 14, 2012 from: [http://www.maketools.com/articles-papers/CoCreation\\_Sanders\\_Stappers\\_08\\_preprint.pdf](http://www.maketools.com/articles-papers/CoCreation_Sanders_Stappers_08_preprint.pdf)
- Sanders, E. B-N., Simons, G. 2009. A Social Vision for Value Co-creation in Design. *Open Source Business Resource*, December 2009: Value Co-Creation. Retrieved June 5, 2012 from: [http://www.maketools.com/articles-papers/Social\\_Vision\\_for\\_Value\\_CoCreation\\_in\\_Design.pdf](http://www.maketools.com/articles-papers/Social_Vision_for_Value_CoCreation_in_Design.pdf)
- Sanders, E.B-N., Liem, A. 2011. The Impact of Human-Centred Design Workshops in Strategic Design Projects. *Human Centered Design, Koruso, M. (Ed.). HCII 2011, LNCS 6776*, pp. 110–119, 2011. Retrieved May, 5, 2012 from: <http://www.maketools.com/articles-papers/LiemSanders.pdf>
- Southall, M. 2012. Integrated Traceability in Fresh Foods: A GS1 US White Paper. Presentation at GS1 Connect Conference. June. Retrieved on July 15, 2012 from: [http://speakers.uconnectevent.org/2012/finalppt/371\\_06052012\\_144640.pdf](http://speakers.uconnectevent.org/2012/finalppt/371_06052012_144640.pdf)
- Steelfisher, G., Weldon, K., Benson, J. M., Blendon, R. J. 2010. Public Perception of Food Recalls and Production Safety: Two Surveys of the American Public. *Journal of Food Safety*. 30: 848-866.
- Sullivan, J. 2007. E. Coli's long gone, but spinach sales are still hurting. *USA Today*. Retrieved February 2, 2012 from: [http://www.usatoday.com/money/industries/food/2007-01-29-spinach-usat\\_x.htm](http://www.usatoday.com/money/industries/food/2007-01-29-spinach-usat_x.htm).
- US Congress. 2011. FDA Food Modernization Act. 111th Congress. *Public Law 111-353-Jan. 4, 2011*. Retrieved June 8, 2012 from: <http://www.gpo.gov/fdsys/pkg/PLAW-111publ353/pdf/PLAW-111publ353.pdf>.
- Waller, P., Stearns, D. 2006. Where's the Meat? The Need for Full Public Disclosure in Meat Recalls. *Journal of Environmental Health*. 68, No. 10: 58-60, June.

---

#### Clinton Carlson

Title: Assistant Professor  
 Address: University of North Texas  
 College of Visual Art and Design  
 1155 Union Circle #305100, Denton, TX  
 76203-5017  
 E: [clinton.carlson@unt.edu](mailto:clinton.carlson@unt.edu)

#### About the author

Clinton Carlson is an Assistant Professor of Communication Design in the College of Visual Arts at the University of North Texas (UNT). Carlson holds an MDES in Visual Communication Design from the University of Alberta. His current research includes the design of maps for disease prevention and awareness; design and testing of alternative communication systems during food recalls; and the use of participatory design methods for development of communications in micro-community settings.

Whitney Peake is an Assistant Professor of Management in the College of Business at the University of North Texas. With an M.S. and Ph.D. in agricultural economics from Purdue University, she works to combine her knowledge of the agribusiness industry with both management and entrepreneurship. Whitney currently teaches and researches in the area of entrepreneurship, and has most recently placed focus on legitimacy seeking, management, and losses in both entrepreneurial and long-standing firms.