



U.S. CONSUMER PRODUCT SAFETY COMMISSION  
WASHINGTON, DC 20207

**Summary of Recall Effectiveness Meeting #3**  
**"Measuring Recall Effectiveness"**  
**September 9, 2003**

The U.S. Consumer Product Safety Commission (CPSC) held a series of meetings addressing different aspects of Recall Effectiveness. The goal for these meetings was to develop concrete ideas that can be used by the CPSC to enhance future recalls. The third meeting, "Measuring Recall Effectiveness" was held on September 9, 2003 at the CPSC Headquarters in Bethesda, MD. This meeting was designed specifically to solicit information about how CPSC can better measure the effectiveness of recalls.

This meeting consisted of 7 panelists (see Appendix 1 for biographies) who discussed the following issues related to measuring effectiveness:

- 1) How should CPSC define recall effectiveness? For example, if consumers receive messages about recalled products they own, but do not act on the remedy, has the recall been effective?
- 2) If, during a recall campaign, consumers choose not to take advantage of a recall remedy but instead decide not to use a recalled product or to throw it out, is there a way to measure this? Are there surrogate measures that will capture this?
- 3) Are consumers more likely to act on recalls involving expensive products and/or products with longer lifespans? If so, what role should price and intended lifespan of consumer products play in developing corrective action (recall) plans? How does one address these elements in measuring the effectiveness of a product recall?
- 4) Is there a way to efficiently and inexpensively pretest proposed recall strategies for specific campaigns? Can recalls be developed in such a way as to compare them against each other to measure effectiveness? Is there a way to develop predictive models of recall effectiveness?

Below is a summary of the discussion divided by issues. The summary reflects all issues raised during the discussion and therefore, some responses may not directly answer the question asked. The discussion/answers below are the expressed opinions of the panelists and not necessarily those of the commission. Attached as Appendix 2 and 3 are written responses provided by two of the panelists.

**1. How should CPSC define recall effectiveness?**

- The CPSC currently measures recall effectiveness by comparing products in the distribution chain with the number of consumers who take advantage of the remedy offered in the recall.

- The real measurement should be "hazard removal" for three reasons:
  - 1) The number of products distributed can be very different from the number still available, considering the life cycle of products, failures, and decay rates.
  - 2) Getting products back from retailers and wholesalers is different from getting products back from consumers. Products returned from retailers shouldn't count toward hazard removal.
  - 3) Consumers can remove the hazard without taking advantage of the offered remedy. They can throw the product out, change their behavior with the product, or just stop using it. In these cases, the "hazard" has been removed, but the manufacturer and CPSC don't know it.
- Recalls should be based on the risk level to the consumer. All products do not have equal risks so recalls should be addressed with a 2-tier approach. Products with a high risk, high harm level receive "high" focus for the recall. Products with a low risk, low harm level receive "lower" focus. (CPSC does currently give risk the highest focus and risk does affect the promotion of the recall.)
- Another way to look at how successful a recall will be is to assess consumer behavior when they have a problem with a product. Recent surveys show that 70 to 80% of consumers will just throw away a product that costs less than \$100, rather than try to get it fixed. So, one could expect that if the product being recalled is worth less than \$100, consumers may use the same behavior.
- The definition for "effectiveness" needs to consider why the product is being recalled. The recall can be considered successful if the end result is reduction in "bodily harm" or reduction in incidents, rather than the number of products removed. However, as one panelist pointed out, one problem with this idea is that injury data doesn't always track to the lowest level of product/model and there is a delay in data collection.
- When it comes to hazard removal there are systems in effect right now that interface between product and consumer. "OnStar" is one example of on-product sensors that can identify product defects and can notify the user when there is a problem. CPSC should be part of a "think" center developing "smart" products.
- National Highway Traffic Safety Administration (NHTSA) has an advantage with recalls because automobile ownership is registered. Even so their overall recall effectiveness rate is about 72%.
- Compare recalls to class action court cases. In a class action, studies are done to determine what type of people will have the product (i.e., demographics of consumers). Then, nationally syndicated advertising is used to gather media consumption demographics; the two demographics are then overlaid to focus the class action message to the targeted consumers. The same can be done for recalls. By focusing the message and the media distribution of the message, the chances of actually reaching an affected consumer are much higher and so the recall should be more successful.

- A recall's success is very much dependent on human behavior and that is where more and better understanding is needed.
- There needs to be more importance behind a CPSC recall; give companies credit for working with CPSC.

**2. If, during a recall campaign, consumers choose not to take advantage of a recall remedy but instead decide not to use a recalled product or to throw it out, is there a way to measure this?**

- Look for spikes in sales of similar products and ask consumers why they are purchasing the new product. Use pop-up questionnaires for on-line purchases.
- Get demographics on the consumers who bought the product and use the same "enticing" advertising that got them to buy it to get them to return it or to notify the company that they have destroyed the product. Some big companies have this information, but a lot of smaller companies are just not capable or prepared to do that reverse advertising.
- Done correctly, a recall need not tarnish a company's reputation. If they do it appropriately, they could get consumers to let them know if/when/how they disposed of the product. Consumers may be loyal to a company they trust and feel is looking out for them. Corporations need to measure good will.

**3. Are consumers more likely to act on recalls involving expensive products, and/or products with longer lifespans?**

- Price and life cycle do play a role in recalls. Several studies have shown that price is a significant driver in the success of a recall; the higher the price of the product the higher the probability of return. The likelihood of harm also plays a role. The higher the likelihood, the higher the return rates.
- Retailers have the most vested interests in a successful recall because they are the ones who deal with the consumer directly and want to keep their customers. With credit cards, websites, and customer databases growing, retailers are in a position to build a positive relationship with their customers with respect to how they handle a recall. They may be able to use the information they have to contact the customer. The price and lifespan of the product shouldn't matter, if the manufacturer and retailer promote the recall correctly.

**4. Is there a way to efficiently and inexpensively pretest proposed recall strategies for specific campaigns?**

- Education is important. CPSC has the most data because most individual companies are not involved in a lot of recalls themselves, but CPSC is involved in all of the recalls. CPSC should teach the companies the proper way to conduct a successful recall.
- CPSC's database was not created for the purpose of analyzing recall effectiveness. It is a management tool for tracking staff work.
- In food management, crisis communications require "fire drills" for recalls. It is in the company's best interest to be prepared. Companies need to have a plan in place from the beginning to be able to implement a recall and they need to practice the distribution of the recall message.
- Testing the message also plays into the issue of the credibility and validity of CPSC. The message is critical to the success, so building up the credibility of CPSC is also critical.
- Pretests that take into consideration behavioral factors are also important. Consider research avenues that look at consumer awareness of recalls. Look at ways people respond to recalls, such as multiple media sources. Find out what factors make consumers "not" respond to recalls.
- Technology can help with recalls. Some companies are using best design practices and Six-Sigma and product life testing. Real time models can be made with current technology and testing can be done on them.
- Also, it isn't just the life cycle manager who needs to think about recalls. Marketing departments should also be involved. Companies need to have all their departments talking to each other.
- There isn't a lot of research on what consumers do with recalled products. But, research on what consumers do when/if a product they own has a problem can be a good starting point.

The meeting adjourned at 12:30 p.m.

**Appendices:**

Appendix 1: Biographies of Panelists

Appendix 2: Written response by Jeanne C. Finegan, APR

Appendix 3: Written response (in PowerPoint format) by Douglas Adams, Ph.D.

**Appendix 1**  
**CPSC RECALL EFFECTIVENESS MEETING #3**  
**MEASURING RECALL EFFECTIVENESS**

**Biographies of Panelists**  
**September 9, 2003**

***Douglas Adams, Ph.D., Assistant Professor, Purdue University***

Dr. Adams received his M.S. in 1997 in Mechanical Engineering from MIT and Ph.D. in 2000 from the University of Cincinnati where he worked as a University Distinguished Graduate Assistant in nonlinear systems. In July 2000, he joined the faculty of the School of Mechanical Engineering at Purdue University, where he teaches and conducts research in noise & vibration control and reliability engineering involving various aspects of diagnostics and prognostics. Dr. Adams was awarded a prestigious *2001 Presidential Early Career Award for Scientists and Engineers* in July 2002 by President George W. Bush at the White House for his research in structural health monitoring and received a *2001 U.S. Army Young Investigator Award*. He has since received the inaugural 2002 Purdue University *Mechanical Engineering Research Discovery Award*, 2003 *Schools of Engineering Young Faculty Researcher Excellence Award*, and the 2003 *Mechanical Engineering Solberg Award* for excellence in teaching.

Dr. Adams has carried out research in reliability (diagnostics and prognostics) in the private and government sectors. With nearly 50 journal and conference papers, his work in diagnostics and prognostics has been the focus of two television documentaries in addition to over 30 magazine and newspaper articles. Prof. Adams has given seminars at more than two dozen universities, research organizations, and workshops worldwide and is an invited lecturer at the 2003 PanAmerican Studies Institute on Prognosis in Brazil and a keynote speaker at the 2003 European Defence Manufacturing Summit in Switzerland.

***Jeanne Finegan, APR, Vice President and Director, Huntington Legal Advertising***

Ms. Finegan is a vice president of Poorman Douglas Corporation (P-D) and is the director and founder of P-D's division, Huntington Advertising. She has more than 20 years of marketing and advertising experience and is a nationally recognized specialist in class action notification campaigns. Ms. Finegan has designed and implemented many large and high-profile legal notice communication programs. In the course of her class action experience, courts have recognized the merits of, and admitted expert testimony based on, her scientific evaluation of the effectiveness of notice plans.

Ms. Finegan has designed legal notices for a wide range of class actions and consumer matters that include product liability, construction defect, anti-trust, medical/ pharmaceutical, human rights, civil rights, telecommunications, media, environment, securities, banking, insurance, restructuring and product recalls. Her consulting work includes the design and implementation of crisis communication plans, which include communications objectives, crisis team roles and responsibilities, crisis response procedures, regulatory protocols, definitions of incidents that require various levels of notice, target audiences, and threat assessment protocols. Ms. Finegan

has written and lectured extensively on the issue of legal/corrective notice and how to target and appropriately measure the effectiveness of notice communication programs.

***Kenneth Gabriel, Partner, KPMG LLP***

Mr. Gabriel is a partner in the Risk & Advisory Practice providing Information Risk Technology (IRM) Services for the Midwest. Mr. Gabriel is KPMG's IRM Industry Sector Leader for the Retail Industry. Ken is the Midwest Practice Leader for our Systems Integration Controls (SIC) and the Project Risk Management Services (PRM). In this role, he has the oversight responsibilities for all of our SIC and PRM projects in the Midwest. His focus is serving clients in the industrial manufacturing and distribution industry. Over the years, he has served multi-national clients of all sizes. Mr. Gabriel has been with the Firm for over 26 years, providing assurance, information risk management and business advisory services to public and privately held companies. Mr. Gabriel has led projects for his clients to measure the effectiveness of product recall procedures. These projects included data mining, data analysis, data scrubbing and review of the processes and controls put into place to gather and measure product recall.

Mr. Gabriel holds a B.A. degree in accounting from Lewis University. He currently serves on the Lewis University Board of Trustees and the MBA Executive Board. He is a member of the AICPA, the Illinois Society of Certified Public Accountants, the East-West Corporate Corridor Association, and the DuPage Association of Commerce and Industry. Mr. Gabriel has conducted various seminars and presentations over his years with KPMG.

***John Goodman, President, TARP***

Mr. Goodman is a founding member of TARP, a research and consulting organization that specializes in customer service and quality improvement since 1972. Throughout his career, Mr. Goodman has managed more than 600 separate customer service studies, including TARP's White House sponsored evaluation of complaint handling practices in government and business; studies quantifying word-of-mouth; and the bottom-line impact of consumer education, as well as five benchmark studies of the use of toll-free service numbers by major corporations. He has taught courses on quality measurement and improvement for Wharton Business School Executive Education and the American Society for Quality.

Mr. Goodman graduated from Carnegie Mellon University with a B.S. in chemical engineering. He received an M.B.A. from Harvard Graduate School of Business Administration.

***Edward Heiden, Ph.D., President, Heiden Associates, Inc.***

Dr. Heiden is president of Heiden Associates, Inc., a Washington, DC economic and product safety consulting firm. As president, he has directed and conducted studies on health, safety, and environmental regulatory and economic issues for numerous private and government clients. These studies have included consumer product risk analyses, evaluations of health and safety data systems, studies of the economic impact of regulations, and product recall effectiveness assessments. Most recently, under contract to the U.S. Consumer Product Safety Commission (CPSC), he directed a multi-disciplinary review and summary of the literature on consumer

motivation and behavior affecting product recall participation. He has testified as an expert witness before a number of courts and administrative and regulatory agencies, and has conducted seminars on recall effectiveness under programs sponsored by the Practicing Law Institute and the American Bar Association. He has published on diverse topics in the product safety, health, environmental, and anti-trust areas.

Prior to becoming a consultant, Dr. Heiden held a number of senior positions in the federal government and was a member of the economics faculty at the University of Wisconsin (Madison). Dr. Heiden received his Ph.D. in Economics from Washington University (St. Louis), specializing in industrial organization. He was also a Woodrow Wilson scholar at Harvard University.

***Harriet Mouchly-Weiss, a Founder and Managing Partner, Strategy XXI Group, Ltd.***

Ms. Mouchly-Weiss is a founder and managing partner of Strategy XXI Group, Ltd., a global strategic communications company, and has been in the communications field for over 30 years. She has advised heads of government, senior government ministers, and CEOs of Fortune 500 companies. She has been working with China for the last 10 years as an advisor and consultant to multinational companies and government and has maintained a Strategy XXI office in Beijing for the past six years.

As communications, crisis, and issues management consultant to the Toy Industry Association for the past seven years, she has advised her client on product recalls, ethical manufacturing, and product safety. She is an active member of the Board of Visage Technology, Inc., a division of LAU Technologies; the Board of American Greetings; and the Board of Overseers for the Malcolm Baldrige National Quality Award Program. Ms. Mouchly-Weiss holds a B.A. degree from Muhlenburg University and a master's degree in psychology from Hebrew University.

***George H. Person, P. E., NHTSA/Office of Defects Investigation***

Mr. Person is the Chief of the Recall Management Division at the National Highway Traffic Safety Administration's (NHTSA) Office of Defects Investigation (ODI). Mr. Person has worked at NHTSA for 18 years, where he also was a special assistant to the ODI Office Director and a safety defect investigator. While at NHTSA, he was involved in the Artemis defect and recall information system and the principal investigator for its largest vehicle recall. He was the recipient of the Secretary's Award for his work on the Early Warning Rule.

Mr. Person also has worked in various design engineering positions at the Ford Motor Company, Bendix Corp. Automotive Electronics Division, and Newport News Shipbuilding Company. He graduated from the University of Michigan with a B.S.M.E., an M.S.M.E., and an M.B.A.

**Appendix 2**  
**Written Response by Jeanne C. Finegan, APR**

**Consumer Product Safety Commission**  
**Panel Discussion**

September 9, 2003  
Bethesda, MD

**POORMAN-DOUGLAS CORPORATION AND**  
**HUNTINGTON LEGAL ADVERTISING**  
**JEANNE C. FINEGAN, APR**  
**RESPONSES**

**1. How should CPSC define recall effectiveness? Example, if consumers receive messages about recalled products they own, but do not act on the remedy, has the recall been effective?**

There are several other key questions that need to be addressed. First of all how are you measuring action? Each recall will be unique and not all consumers will behave in the same way? Units returned will not always be an accurate measurement? Recordation of destruction? How do you know they have received a message? Have you developed a scientific media program that defines this affected group and then demonstrates by industry-accepted practice what percentage will be reached?

At the onset of a recall the CPSC needs to be clear with the companies as to how CPSC expects the company to define action/response and how certain actions/responses can be measured. Inaction is certainly not acceptable, but consider that consumers may be acting outside the recall mechanism. As I understand it, this type of behavior is not currently measured. At the onset of a recall, the CPSC may want to consider asking a company to watch for spikes in sales and be sure to have the company ask, at the point of purchase, why the consumer is purchasing. Some people don't want to go through the paperwork and waiting of the rebates or recall. They may just go out and buy new product. If a company knows in advance that they should ask why consumers are purchasing product during a recall, then they can track sales information and compare it against past sales history. If the sales spike is anomalous, then one can infer that product is being purchased as a replacement. This will provide statistical information valuable in overall response rates.

**Step 1 - Defining the Action:**

Define the factors that have precipitated a product recall or class action.



## **Step 2 – Specific Observations:**

While each situation is unique, there are many similarities between a class action and high profile recall notice programs. The focus should revolve around the manner and form of notice in consideration of the specific case variables and anticipated campaign, as well as a company's ability to conduct a campaign:

- Reputation Damage – Analysis of extent of long-term damage and affect on other company products.
- Bodily Injury and/or Property Damage – Frequency and severity analysis.
- Fit for Intended Purpose – Owners manuals, written and verbal statements, component parts that cause harm i.e. Pacemakers containing lead, which results in illness or death from poisoning.
- Product Lifespan – Warranty/written guarantees, obsolescence, failure rates and destructive testing.
- Impact of Relief – Measurement of various worse to best case scenarios.
- Exposure Scale – Number of units sold and believed to be in use.
- Product Price – Overall cost of campaign and willingness of consumers to participate.
- Target Audience – Defining socio-economic, geographic, and specific consumer factors and media consumption habits. Then scientifically construct a media program to reach a majority of the target audience.

Analysis of these variables will help guide the manner and scope of the selected campaign, and the desired outcomes. Statistical evidence demonstrates that outcomes can be accurately forecasted given scientific information available about human behavior. These “predictive factors” should be considered in any nascent campaign planning stages.

## **Step 3 – Actionable Recommendations:**

It is recommended that the Recall Coordinator in cooperation with the CPSC should strive to address the specific case variables. This process should progress to the development of a notification matrix, which will further refine the scope and form of the campaign.

## **Step 4 – Objective Setting:**

At this point, quantifiable objectives can be established in consideration of intended outcomes. Central to the success of your communication with a company is not to elicit a visceral response. Although you need to get their attention, CPSC needs to find a way to help Shepard a company through the process. Communicating CPSC's expectations

to the company by way of a Liaison consultant or direct team communication might be helpful.

Now, how will you measure effectiveness? This process should scientifically define the target audience, to understand who they are, how they have or will be affected, and the urgency and extent of the campaign. The scientific definition will characterize the target audience by their demographic characteristics as well as their psychographics.

### **Step 5 - Media Plan Development:**

A specialized legal communications notice firm should be engaged to work in partnership with the campaign coordinators to develop a customized media plan, given the specific campaign objectives. Statistical data is utilized in the media plan, which defines the media consumption habits of the target audience. **Why use a scientifically based media plan?** So you can quantify the affected target audience and prove that you reached them with the media that they tend to use. In class action we are frequently called upon to prove that we have reached a certain percentage of the target audience. Based on their media consumption habits, we will suggest certain frequency levels, i.e., they need to see the message more than once.

The media analysis should be based on data provided by nationally syndicated media research bureaus such as Mediamark Research or Simmons.

Mediamark Research offers comprehensive demographic, lifestyle, product usage and exposure to all forms of advertising media. It is the leading U.S. supplier of multimedia audience research. It provides information to magazines, television, radio, Internet and other media to over 450 advertising agencies - including 90 of the top 100 in the United States. Mediamark's national syndicated data are widely used by these companies as the basis for the majority of the media and marketing plans that are written for advertised brands in the United States.

Mediamark conducts more than 26,000 personal interviews with consumers annually throughout the continental United States to produce syndicated reports and data for electronic access. Custom studies are also available using the Internet, telephone and mail samples.

Class action notice is considered the highest standard of notice. Why? Because as the Supreme Court stated in a pivotal decision *In re: Mullane v Central Hanover Bank...* "The right to be heard has little reality or worth unless one is informed that a matter is pending and can choose for himself whether to appear, default, acquiesce or contest. The significant burden of notice falls where the direct methods of contact are limited and individual's rights are affected. Why shouldn't the recall of a product that can kill people have any fewer burdens?

That is why recall campaigns should be scientifically designed so that I can quantify whom I am reaching, what percentage of the target I am reaching and how many times they will see the message.

Simply placing ads in the local newspaper might not be the most appropriate way to go. Here's why.... Newspaper distribution has been on the decline for the past 30 years. According to the National Association of Newspapers, Newspaper readership is on the decline. Since 1967, it has dropped from a high of 87 percent to about 56%.

### **During a Recall, consumers may be outside the "buying cycle."**

Scientifically designed programs take into consideration both demographic characteristics as well as psychographics. Within this context we will be able to see what media the target audience will consume "outside a buying cycle" and how loyal they are to certain media. Certain factors within the media study are critical to consider. First, how rapidly do you need to get the message out? Certain types of media accumulate audience more quickly than others. Broadcast obviously is immediate. Newspaper will reach 98 percent of its audience in the first week. Nationally syndicated newspaper insert such as Parade and USA Weekend do the same. Now, interestingly, magazines will take much longer to deliver the entire audience. The Internet is much like television. Banner ads have been a very effective tool in class action notice.

If the Company spends the extra money to conduct an appropriately targeted recall notice, it could derive the following benefits:

- Reputation is helped because the company is being a good corp. citizen to notify affected individuals of a hazard
- Scientifically developed programs will be defensible if future claims arise. We can prove that we have made a good faith effort to notify.
- Scientifically developed programs will start statutes of limitation; in most cases it will put a bow tie on the process. Most states are about 2 years, with the exception of California - 1 year.
- It might draw out lawsuits, but you will see all of them, and you can manage them. And you can control the process.
- It helps future insurability because you can prove that you have notified everyone.
- If a class action occurs, the class size will be reduced because of the notification. You will only be dealing with pre-noticed members. Not prospective members.

In summary, in order to rate A, B and C you need to set measurable objectives at the start. I want to get notice to X people. Based on previous experience with notice, the

type of product and how it has affected the target audience, I can expect X number of products to be returned.

My measurable objectives will be based upon weighing the factors that drove the recall, the cost, and benefit. The benefit to the Consumer and the CPSC as well as the company is that all the parties can then achieve recall goals as originally outlined in the objective matrix.

How do I weigh them? In my assessment, and based on my experience in working on high profile class action notice, all parties will look to the impact of the harm or the injury as the most important and should be the most heavily weighted. It will drive human behavior.

It is well understood in my profession that there 5 reasons why information campaigns fail. I'm sure that you might have heard this from my public relations colleagues.

1. There exists a populace of individuals that are difficult to reach and motivate under any circumstances.
2. Those interested will be the first to acquire the available information.
- 3 People seek information that is compatible with their prior attitudes and avoid exposure to that which is not compatible.
4. Persons perceive, absorb and remember the same content differently.
- 5 Information that has been disseminated does not necessarily change attitudes or invoke desired behaviors. *[They may be distrustful of the government and simply call the company]*

This is why people might not want to be bothered with filling out information and waiting. They might simply get rid of the product and buy a new one.

Additionally it speaks to appropriately designed recall notice. Passive notice, by way of a press release that may or may not be picked up, is no longer going to work in most instances. Controlling the message and making sure that it gets to the right people is critical.

There are a number of advertising industry studies, which indicate that because we are daily bombarded by over 3,000 marketing messages we tend not to pay attention to most of what we hear until we are reminded with adequate frequency. In class action notice, there are certain benchmarks for notice.

Again, if the case is high profile, harm has been caused, there are many in the class, the methods for direct contact are relatively poor, then the burden of notice is great. Generally speaking, we will try to design notices that are reaching AT LEAST 80+ percent of the target audience. Frequency levels will vary according to the matter. In product defect matters we will see frequencies of 3 or more. People can't be expected to see a message once and act on it. We just don't work that way.

**2. If during a recall campaign, consumers choose not to take advantage of a recall remedy but instead decide not to use a recalled product or to throw it out, is there a way to measure this? Are there surrogate measures that will capture this?**

Yes. Measure sales around the recall.

Additionally, I think that this depends on the product and if some sort of a registry or other way to capture consumer purchase information on the front end. There is no good way to capture who threw out the product without first notifying the company or CPSC that I can think of.

**3. Are consumers more likely to act on recalls involving expensive products and/or products with longer lifespan? If so, what role should price and intended lifespan of consumer products play in developing corrective actions plans?**

Absolutely. Whether contemplated in the consumer Protection Action or not, consumers definitely consider losing money though no fault of their own an issue and a "harm."

How are you defining harm? Maybe hazard should be defined as a product or condition that is likely to cause "serious physical harm or significant financial deprivation."

There are some social implications as to how you phrase it. "Expensive" products may not be the right vehicle for the discussion you want to have. Economic and physical harm are viable injuries for which suits can be brought. Then when you are looking at the target audience composition, expense is a component. Physical harm will elicit a sense of urgency and trigger a certain level of response.

Let's go back to our list of what prompted the recall or corrective action.

The same factors that drove our recall impact the response, and need to be addressed.

Financial/Physical - bigger notice

Intended purpose - pacemaker lead...causes death

Lifespan of product - more than 2 years

Impact of hazard – causes serious injury or death  
Outrage factor – very grumpy  
Company direct contact – limited because we don't update it  
Impact of relief – injunctive and possible replacement  
Number of units - nationwide  
Product price – under \$30 over \$100  
Target audience – literacy levels, time constraints

Now, what role should price and intended lifespan of consumer products play in developing corrective action plans? Those factors should be considered in designing the scope and form of the recall. Further, by understanding human behavior and the impact that economic loss has on it, regulated entities should embrace these two factors as components that will help them improve customer relations. At that point, it's about doing the right thing. One advantage is that because you are doing an appropriate corrective action program, you will reduce future liability by reducing the size of the total impacted class.

Although the CPA only addresses physical harm (prospective), a company can also be sued for unnecessary and unreasonable economic losses caused by a bad product or bad corporate behavior! So it is in a company's best interest to understand and consider all factors, including economic, when designing a corrective action.

#### **4. Is there a way to efficiently and inexpensively pretest proposed recall strategies for specific campaigns?**

I suppose that you can conduct focus group and test market campaigns. This however, takes time. If you scientifically develop the notice and make sure you communicate it in plain language, you shouldn't have a problem.

#### **4a. Can recalls be developed in such a way as to compare them against each other to measure effectiveness?**

Yes. This is done in class action all the time. By utilizing the strategy proposed in Question 1, corrective actions can be planned in advance and tested. Second, there is statistical and scientific information available on human behavior as it relates to elements of proposed recall strategies, i.e. how affected groups learn and understand messages, education levels, time constraints, how they react to mail, read and open rates, etc. Third there is comparability between corrective actions we are discussing here today and other events, like class action lawsuits and notice. There is much "real-life" experience on effect of notice on human behavior/action in this arena (e.g., if we want them to act make it plain language, use color and media that they consume.)

Campaigns should be made as a matter of public record.

Recalls can be developed in such a way as to compare them against each other to measure effectiveness. If you use similar/comparable criteria, objectives and methodology, yes. I think this will be true even if the products themselves are not similar.

An example is found in class action. If I manufacture hardboard siding and I am faced with a class action, I can see all the other companies that have had cases filed against them. I can request from the court affidavits of the legal notice communicator and see how the class was modeled, what media was selected, what percentage of the audience was reached and how frequently they had the opportunity to see it. I can, for the most part, also know what the overall response was, by way of a post analysis affidavit.

#### **4b. Is there a way to develop a predictive model of recall effectiveness?**

Yes. I think that you might already have a feel for the response rates given the impact and the type of product. As Mark Schoem indicated to me, recalls average anywhere from 30-40% effectiveness depending upon the product. Of course, expensive larger products have a higher return rate where as throw away promotional toys could have a lower return rate.

Again, this is something we deal with in class action all the time. The first question any of our clients ask is what will the response rate be? The answer is that it will be determined by the following:

**Impact of harm** – Will my health and well being be affected?

**Immediacy** – Do I need to take action on it right now?

**Direct Methods of contact** - If you do have a database, understand that the U.S. Postal Service says people move. Your database may erode by as much as 14 percent per year if not continuously updated.

**Treatment of direct mail** - Understanding the demographics of the class is critical. Just because you mail a notice doesn't mean that the recipient will open it or read it.

The U.S. Postal Service in its *Household Diary Study of Mail Use and Attitudes* has some interesting statistics. For example, "Read" and "Open" rates for "official

looking" mail will vary based upon income level, familiarity with a company and the type of company. Interestingly, people will receive mail, and just put it away. It goes in the bill cycle.

As cited by the U.S. Postal service, those who make over \$100,000 per year, only 39 percent read their mail right away. In comparison, 44 percent of those who make \$25,000 to \$30,000 per year read their mail right away.

Additionally, if you are a current customer of a company, only 18 percent will respond right away to mail.

This is why direct mail alone nets few results.

**Outreach Effort** – Passive or scientifically measured?

Am I depending on point of purchase, a posting on a website and a press release, or am I buying ads in targeted publications. What weight is placed on the media?

Finally, response will be determined by what are you asking the consumer to do. If I ask them to do too much and they have to expend a greater effort than the perceived value of the recalled item, I will have a very small response. If I have a high value, high impact item and you make it easy for the consumer to respond, your response will be significant. We find in class action, that any time you ask people to do something complicated or time-consuming, it cuts by a large percentage the response. If they simply have to sign something and receive recovery, you will have a greater response.

One thing that is done in class action is to review the incoming responses and determine if additional notification needs to take place, because response is low in certain areas. That might be based on media, or product awareness.



**Appendix 3**  
**Written Response (in PowerPoint format) by Douglas Adams, Ph.D.**

# ***U.S. CONSUMER PRODUCT SAFETY COMMISSION MEASURING RECALL EFFECTIVENESS MEETING***

Bethesda, Maryland  
Tuesday September 9 2003

**Douglas E. Adams**

Assistant Professor

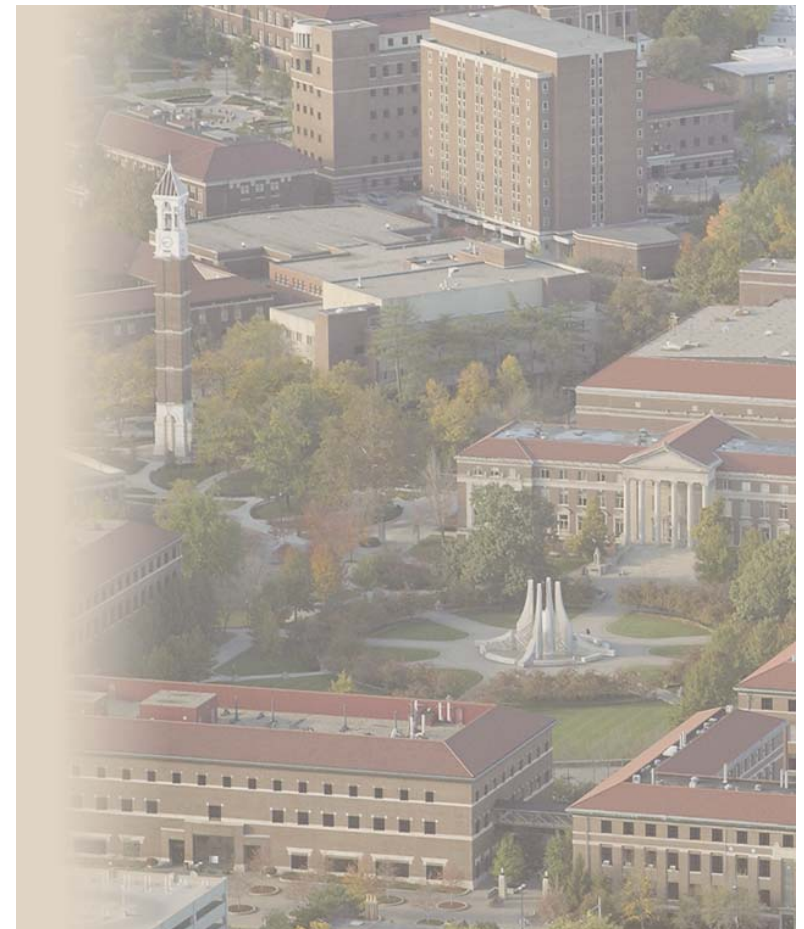
Purdue University, School of Mechanical Engineering

Ray W. Herrick Laboratories

*Facility for Experimental Nonlinear Dynamics & Diagnostics (FEND<sup>2</sup>)*

<http://widget.ecn.purdue.edu/~FEND2>

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# Defining Effectiveness – Q#1

- How should CPSC define recall effectiveness? For example, if consumers receive messages about recalled products they own, but do not act on the remedy, has the recall been effective?

*Effectiveness – To produce the desired effect or outcome; to efficiently produce a desired effect.*

## What is the desired effect?

- Protect consumers by reducing the number of serious injuries or death caused by products

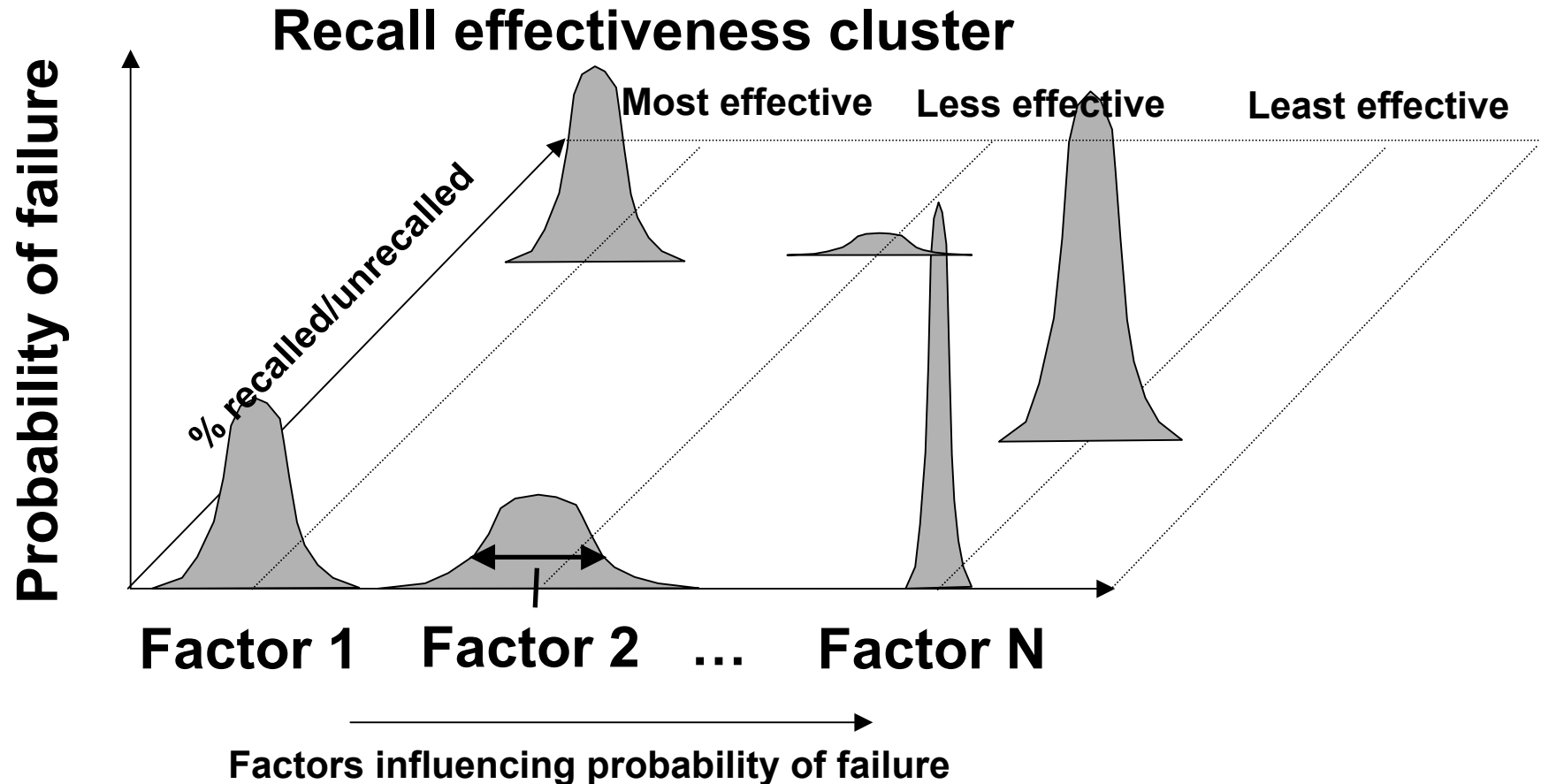
## Conclusion:

Recall effectiveness should be defined with respect to the probability of similar failures taking place in a given product line with continued use or misuse by individual consumers. In other words, the question of whether or not more units will fail must be answered and then the nature of this multi-variable probability-of-failure distribution can be used to define 'product fitness'. Not all consumers use products in the same way (e.g., driver reactions) and not all units within a given product line will fail, so mechanisms for failure must be dissected to properly measure recall effectiveness. Perhaps this responsibility lies partly with the manufacturer.

# Defining Effectiveness – Q#1 (cont.)

- **How should CPSC define recall effectiveness? For example, if consumers receive messages about recalled products they own, but do not act on the remedy, has the recall been effective?**
  - Vigilance in the form of predictive simulation (see answer to last question) throughout the product lifecycle (e.g., product conception, design, analysis, manufacture, testing, marketing, servicing, recalling, remodeling) including both past and current products of interest to CPSC could be useful in measuring the effectiveness of recalls or product reliability and is also the primary means of preventing recalls in the first place. In other words, certain aspects of product behavior and performance are decided at critical stages along the product lifecycle – each decision must be linked to failure because most failures are coupled. Forensic investigations must be approached in this way or else recalls are not properly focused or are too focused making it difficult to assess effectiveness (e.g., Firestone ATX/Ford where driver reactions coupled with tire manufacturing flaws and vehicle specifications on tire pressures resulted in failure). Concrete suggestions: 1) from product failure data (field or test), determine precisely ALL of the variables involved in the failures, and 2) use this data coupled with recall data to develop a demographic (consumer, geography, temperature, humidity, etc.) recall effectiveness cluster map (see below).

# Defining Effectiveness – Q#1 (cont.)



**Basic idea:** Many factors influence probability of failure. In order to reduce conservatism and increase effectiveness (efficiency): examine recalled products and compare with forensic evidence; rate effectiveness by degree of match and % critical factors disposed of.

# Defining Effectiveness – Q#1 (cont.)

■ **How should CPSC define recall effectiveness? For example, if consumers receive messages about recalled products they own, but do not act on the remedy, has the recall been effective?**

- 'Soft' versus 'hard' failures should be approached differently – soft failures are due to continued use whereas hard failures are due to design flaws. These effects would either be included in the recall effectiveness clustering chart or would be considered separately.

More 'visionary' approach:

- Perhaps the 'holy grail' of recall effectiveness measures would be products that are self-aware... imagine a microwave oven that knows it should not be recalled along with a hand full of units that failed because of subtle differences in the manufacturing lifecycle (i.e., poor quality control).
- Is this idea science fiction?
  - Energizer battery touch-sensitive power gauges
  - General Motors OnStar™ system
  - Check-engine light
  - What about OnStar™ system for products that notifies manufacturers when critical recalls (based on clustering) have not taken place and check-recall light to warn consumers?

## Defining Effectiveness – Q#2

- **If, during a recall campaign, consumers choose not to take advantage of a recall remedy but instead decide not to use a recalled product or to throw it out, is there a way to measure this? Are there surrogate measures that will capture this?**
  - Service/maintenance operations are a window into consumer action or lack thereof; use service/maintenance contracts as a means of assessing recall effectiveness (already being done).
  - If measures are not currently available, perhaps novel approaches could be considered...for example,
    - manufacturers could associate every product (by law) with a 'consumer jury', which is selected at random with a demographically diverse distribution (i.e., a jury that spans the various critical factors in cluster chart are selected);
    - consumers in the jury are infrequently polled to determine customer satisfaction with an ulterior motive;
    - when a recall campaign is announced, those consumers are polled (e.g., air travelers who are flagged for inspection) as a surrogate measure of the effectiveness of that recall;
    - this approach increases efficiency because it immediately gets at the heart of the recall's effectiveness.

## Defining Effectiveness – Q#2

- **If, during a recall campaign, consumers choose not to take advantage of a recall remedy but instead decide not to use a recalled product or to throw it out, is there a way to measure this? Are there surrogate measures that will capture this?**
  - Legacy products float from one consumer to another (rentals, garage sales, etc.), but manufacturer data regarding *previous* models that are retired, traded, or exchanged without reacting to recalls could be used as measures in new model products.

More visionary approach:

- Imagine a vehicle suspension system that ‘calls 911 for help’ via wireless transmission (OnStar™) to the local product dealer’s service center because its owner on record has not responded to a recall. If products have the potential to harm their end-users, then surely manufacturers have the ethical responsibility (and perhaps even the legal right) to monitor product lifecycles to the extent that recall remedies have or have not been adopted.



## Defining Effectiveness – Q#3

- **Are consumers more likely to act on recalls involving expensive products and/or products with longer lifespans? If so, what role should price and intended lifespan of consumer products play in developing corrective action (recall) plans? How does one address these elements in measuring recall effectiveness?**

- It seems reasonable to assume that consumers are most likely to act on recalls when they are aware of them and feel compelled to do so, i.e., \$.
- Intended lifespan should only play a role if products are designed to degrade gracefully; otherwise, premature end-of-life concerns exist. The price of products should not necessarily play a role because 'weak-links' can be relatively inexpensive (i.e., tires as a % of cost of vehicle); the price of not acting should be the most important metric (i.e., clustering).
- A series of weighting functions could be appended to the clustering map used to estimate an overall 'product fitness' based on the assumption that the forensics for each failure indicate that many different factors (price, lifespan, other...) contribute differently to the overall probability of failure:

$$\text{Product Fitness} = (W_1 \text{ due to factor 1}) \times (\text{Cluster metric}) + (W_2 \text{ due to factor 2}) \times (\text{Cluster metric}) + \dots$$

# Defining Effectiveness – Q#4

- **Is there a way to efficiently and inexpensively pretest proposed recall strategies for specific campaigns? Can recalls be developed in such a way as to compare them against each other to measure effectiveness? Is there a way to develop predictive models of recall effectiveness?**
  - Perhaps agent-based simulations could be utilized for this purpose, where agents are consumers and products and behavioral/usage models are used to ‘war-game’ one recall campaign vs. another. Metrics of success for different product lifecycle models can be compared. Simulations with humans-in-the-loop must be used; behavioral models for cognition and decision making exist. Note that human behavior is difficult to model so psychologists (non-traditional reliability personnel) must be consulted.
  - One might also purchase and instrument a fleet of units for an *in situ* study of product reliability and trends that might indicate the ways in which that product could fail. This data could in turn be used to pinpoint demographic links to product failure. In other words, products are field tested for a short period of time using the type of ‘consumer jury’ mentioned previously. Field testing reduces uncertainty due to behavioral and product failure models.

# Defining Effectiveness – Q#4

- **Is there a way to efficiently and inexpensively pretest proposed recall strategies for specific campaigns? Can recalls be developed in such a way as to compare them against each other to measure effectiveness? Is there a way to develop predictive models of recall effectiveness?**
  - Manufacturers rarely address failures in the design and simulation stage that are caused by degradation with usage; for example, a baby-stroller that functions perfectly when continually used by then fails after having sat for a few years due to mechanism creep leading to malfunction. When reliability tests are conducted in industry, failure rather than degradation is of primary interest. Lifecycle models are needed to anticipate these types of failures due to slow degradation that emerge unexpectedly.
  - Part of the challenge here is that not all systems need to be recalled because the probability of failure given any single factor in the clustering chart is not 100%. Lifecycle models and a rigorous approach to forensics are needed to determine when products will fail. Thus, the clustering map concept is again referred to here.