# U.S. Consumer Product Safety Commission
## LOG OF MEETING

**SUBJECT: Recall Effectiveness**

**DATE OF MEETING: October 7, 2002**

**LOG ENTRY SOURCE: Celestine T. Kiss, ESHF**

**DATE OF LOG ENTRY: October 9, 2002**

**LOCATION: East West Towers, Room 714**

**CPSC ATTENDEE(S): P. Semple, OEX; W. Prunella, EC; M. Schoem, CE; A. Schoem, CE; R. Franklin, EC; S. Heh, EXHR; J. Elder, EXHR; D. Wilson, COMG; M. Gougisha, COTM; P. Weller, COTM; C. Kiss, ESHF; R. Ochsman, ESHF; S. Kyle, OPEX; T. Hardy, OPEX; J. Mohorovic, COHS; J. Troutt, COHS**

**NON-CPSC ATTENDEE(S): Wayne Morris, AHAM; Ed Heiden, AHAM; David Schmeltzer, Consultant; Walt Sanders, Sanders & Associates, LLC**

**SUMMARY OF MEETING: The meeting was requested by Mr. Morris and Mr. Heiden. Mr. Morris explained his organization's interest in Recall Effectiveness and explained that they hired Mr. Heiden to write a "White Paper" on the issue. Mr. Heiden then took over the meeting and presented his paper. See attachments - slides from presentation and paper. There were a few questions and answers, mostly clarification, after the presentation and then the meeting adjourned.**

[redacted] 10-10-02

No Mfrs/Prvtlbls on Products Identified

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# Recall Effectiveness: Review & Analysis of Current Issues

Based on work done for the

Association of Home Appliance Manufacturers (AHAM)

October 7, 2002

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# Objectives

- Make recalls more effective
- Increase consumer participation rates

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# Required Steps

1. Better definition & measurement of "recall effectiveness"
2. Study characteristics & effectiveness of past recalls
3. Better understand consumer notification & response
4. Put study & understanding into action

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# Better Definition & Measure Needed

Current yardstick:

$$\frac{\text{Units returned/repaired}}{\text{Units distributed}}$$

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# Current Definition Mis-Measures Effectiveness

- Current definition understates effectiveness because it does not account for hazard removal by:
  - Units retired from use
  - Consumers discarding product
  - Do-it-yourself activity
  - Consumers changing use of product to address relevant hazard
- Lumps together units in distribution channels & consumer hands

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# Better Measure

Units in consumer hands where hazard has been eliminated

Units still in use

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# Additional Measure

Since some consumers will choose not to respond, measure consumer awareness:

Number of consumers notified

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# Study of Past Recalls

- Insufficient public data
- Available studies are out-of-date (early 1980s and before)
- Previous studies explain important factors

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# Explanatory Factors from Previous Recall Studies

- Length of time in consumer hands
- Percent in consumer hands
- Notification method (e.g., direct mail)
- Ease or difficulty of participation
- Price
- Level of hazard involved

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# New Effectiveness Study Needed

- CPSC has necessary data
  - Monthly progress reports
  - Other company reports
- Currently being developed by CPSC
- Determine explanatory factors and changes from previous studies

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# Consumer Notification & Response

Focal point of new effectiveness efforts

1. Notifying consumers: best media & message design
2. Hazard checking: best way to get consumers to check
3. Hazard response: how to motivate consumers to undertake hazard removal

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# Some Issues with Consumer Notification

- Difficulties getting message out
  - Population mobility
  - Secondary market important for some products
  - TV stations do not use materials furnished to them

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# Some Issues with Consumer Response

- Difficulties translating receipt of message & awareness into checking & hazard removal
  - Consumer disregard of advice to check for relevant model
  - Coffeemakers—at least 30% did not return prepaid shipping carton
  - Rebate coupon redemption rates for new product promotions are low

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# Current CPSC Initiatives

- Undertaking literature search on consumer notification & response issues
- Analyzing internal data on past recalls to determine the factors that can increase effectiveness

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# Suggested Additional Actions

- Input from recall stakeholders
- Forums to obtain supplemental data from consumers, companies, and other experts

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# RECALL EFFECTIVENESS:
# A REVIEW AND ANALYSIS OF CURRENT ISSUES

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April 3, 2002

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## I. Introduction and Summary

On behalf of the Association of Home Appliance Manufacturers (AHAM), we have prepared this discussion paper about some recent proposals to increase recall effectiveness. We share with AHAM an interest in improving recall effectiveness and have often worked with AHAM staff and individual member companies to design and implement successful corrective action programs. We also have worked with fulfillment contractors and other organizations to identify and develop new approaches with the potential to increase recall participation rates.

Last summer, both the Consumer Federation of America (CFA) and the U.S. Consumer Product Safety Commission (CPSC) offered new proposals aimed at improving recall effectiveness. Each would impose new mandates on the design and use of product registration cards (PRCs). The CFA petition advocates new standards for children's products, while the CPSC draft Advance Notice of Proposed Rulemaking (ANPR) would also cover countertop appliances. The CFA petition and the draft ANPR are based on two common premises: 1) current levels of recall participation are very low; and 2) imposing new standards on the design and use of PRCs can substantially increase effectiveness rates. **In contrast, we do not believe that the available evidence is adequate to support the assumptions underlying either the petition or the ANPR.**

This paper has the following purposes: 1) to review the current state of publicly available data on recall effectiveness rates; 2) to characterize the various product- and recall-related factors which influence the effectiveness rate that can be attained by a particular corrective action program; 3) to highlight the contributions of notification and consumer response to the level of awareness of, and participation in, recall programs; and 4) to review what is known about the potential effectiveness of more extensive use of product registration data as a recall tool. On some of these issues, the pool of recent information is disappointingly small, underscoring the need for more effective dissemination and analysis of the extensive information that has been collected by the CPSC on recalls in the past several years. In some instances, there are simply no useful data available, and development of entirely new information is warranted before proceeding with consideration of new standards.

The data in hand do, however, permit us to draw preliminary conclusions about each of the two assumptions underpinning the CFA petition and the draft ANPR. With respect to the first, it is clear that most reported recall effectiveness rates are understated for two reasons. First, because correction rates do not take into account normal product retirements, the number of affected products in use by consumers is often seriously overstated. Second, measuring effectiveness solely by the number of products returned, rebates issued, or repairs registered does not take into account other meaningful consumer responses. These alternatives include discarding low-value items, replacing affected units with newer, more capable products, and do-it-yourself (DIY) consumer modification or alteration of the product to eliminate the reported hazard. Indeed, CPSC, through a Recall Effectiveness Task Force appointed in 1980 by

Chairman Susan King and consisting of agency staff experts drawn from all parts of the agency involved in recall work, conducted a thorough study of recall effectiveness that made essentially these the same argument for a broader definition of recall effectiveness that would take these two important sources of understatement into account.[2]

Using average effectiveness rates as a benchmark of overall recall success also fails to take into account differences among programs in the degree of the hazard involved, the value and average age of the affected product, and the length of time in distribution. Previous CPSC studies have demonstrated that each of these factors has a pronounced impact on the level of returns that can be expected from a recall.

We are considerably less optimistic than the CFA and the CPSC on the prospects for achieving significant increases in recall participation by imposing more stringent requirements for the provision and use of PRCs. Return rates for PRCs are typically quite low—on the order of ten percent or less for most common consumer products. Recent research indicates that changing the specifics of a PRC will have only a modest impact on return rates, particularly for low-value products.

The low return rate is also explained, in part, by factors that are not unique to PRCs, or even to recall and safety programs generally. Even when consumers are offered significant financial incentives to participate in conventional marketing programs for newly purchased products, redemption rates reach the 50-percent mark only for generous offers associated with relatively higher value products.

There are other reasons to question the value of a major effort to expand the provision and return of PRCs. Most importantly, the information collected by PRCs becomes out-of-date rather quickly, because of changes in both product ownership and household location. In the case of product registrations tied to consumer addresses at the time of purchase, it is important to note that nearly one out of every six people (16 percent) moves each year, and the proportion of people moving at least once in every five years is substantially higher.

Moreover, there are some notification and publicity approaches that appear to be promising alternatives to PRCs, although their potential for significantly improving recall success rates has yet to be determined. Comparatively new tools for notifying users of recalls include video news releases (VNRs) and new Internet-based product registration and recall communication tools. These forms of communication may provide the best avenue for improving the link between the initiators of recalls and the owners of affected products.

[2]Report of the Recall Effectiveness Task Force of the Consumer Product Safety Commission, August 25, 1980, Tab B.

There is still much to be learned about the relative effectiveness of various notification approaches and incentive programs in securing higher levels of recall participation. Concern should be directed both to assessing the value of new channels for notifying consumers of recalls and to evaluating the effectiveness of more traditional approaches, such as point-of-sale notification, newspaper/magazine advertising and direct mail, in recent programs. There is also a need to better understand not only the process by which consumers learn about recalls, but also what motivates them to respond to various types of appeals.

As I noted in my remarks at the 1999 CPSC Product Registration Conference, the best available source of information that could be used to conduct some of this research is in the corrective action program files maintained by the CPSC. Other issues will require new data collection and analysis. In our view, mandating specific approaches such as the additional PRC requirements sought in the CPSC draft ANPR and the CFA petition is premature until this information can be obtained, reviewed and analyzed. Reviewing and redacting these recall files and making this information available to the public should be CPSC's first priorities.

The remainder of this paper is organized as follows. In Section II I discuss the limitations of the most commonly used measure of recall effectiveness and suggest adjustments that improve its utility as a benchmark indicator. Section III presents current estimates of recall effectiveness rates for corrective action programs with various types of products, hazards, and distribution profiles. Some critical factors that help to explain the wide range in effectiveness rates are discussed in Section IV. Section V reviews relevant information on consumer response behavior in the context of both recalls and conventional marketing promotions. Section VI provides a summary of consumer response data more specifically focused on product registration cards. The impact of population mobility on the effectiveness of PRCs is discussed in Section VII, and the emergence of new channels for communicating with product owners is detailed in Section VIII.

## II. Problems with the CPSC's Measurement of Recall Effectiveness

There are some fundamental problems with the way in which effectiveness rate estimates are usually computed and reported by the CPSC and other interested parties. Specifically, reported recall effectiveness rates are most commonly calculated as:

$$\frac{\text{Number of products returned or repaired}}{\text{Number of units distributed.}}$$

Unfortunately, this particular statistic is a relatively poor measure of the success of a particular corrective action. There are problems with both the numerator and the denominator of this measure.

A Better Denominator of Recall Effectiveness: Number of Affected Products Actually in Use

First, the appropriate denominator for evaluating the correction of an alleged hazard should be the *number of affected products actually in use*, rather than the number originally distributed. Two adjustments to the raw sales figures are required—one to account for units that have not actually entered into consumers' hands, and a second to account for units that were sold, but are no longer in use. The rationale for each adjustment is discussed in turn.

Capture of affected product units that are still under the control of the manufacturer, distributors, or retailers, rather than in the hands of consumers, is important. However, notification of the relevant actors in the chain of distribution is usually accomplished through different channels than notification to consumers of the product. Moreover, securing return or repair of affected products still in the distribution network does not involve any response or action on the part of consumers. In their early 1980s study of the determinants of recall effectiveness rates, Murphy and Rubin statistically demonstrated that for each ten percent of the affected units that exit the distribution network into consumers hands, the average effectiveness rate of a corrective action plan for that product falls by nine percent.

Unless the percentages of products still under manufacturer, distributor, and retailer control are also noted, the reported effectiveness rate does not provide meaningful evidence on whether or not a particular corrective action plan was "successful"[2]. For example, the draft CPSC ANPR states that certain unspecified recalls of catalogue items and major appliances have achieved effectiveness rates "approaching in excess of 90 percent". In our experience, these rates can be achieved only by programs that captured larger-than-average shares of the total number of affected units before they were sold to consumers and for which the remaining units have been in the hands of consumers for only a short period of time[3]. There is, however, no mention of these factors in the draft ANPR, which concludes instead that the success of these particular programs is explained by a high rate of direct purchaser notification.

On the other end of the product life cycle, effectiveness rates for relatively old or obsolete products are underestimated unless product "retirements" are properly taken into account. Recalls of products that are at the end of, or even well past, their average service lives are not uncommon, but the correction rates reported for these actions are often not based on the actual population of products still in use. The 1980 CPSC Recall Effectiveness Task Force also makes this important point (Tab B, p. 2).

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[2] The 1980 CPSC Task Force Report cited above also notes that in many cases overall effectiveness can be meaningfully assessed only if product returns from the chain of distribution and returns from products in the hands of consumer users are recorded as separate bookkeeping transactions (p. 6).

[3] This experience corroborates that of the first few years of recalls analyzed by the CPSC in the first study of recall effectiveness which it conducted in 1978.

One recent example is the 1999 recall by a major manufacturer of three million units of a kitchen appliance sold between 1983 and 1989. Under reasonable assumptions about average product life, only about one-third of these products were still in use at the time the corrective action program was announced. Thus, the degree of hazard reduction accomplished by this program is nearly three times the level that would be suggested by a standard computation of the recall effectiveness rate.

A Better Numerator of Recall Effectiveness: The Number of Products for Which the Hazard Has Been Eliminated

The metric most commonly used as the top half of the reported effectiveness rate—the number of products actually returned or repaired—is also flawed. Conceptually, the more appropriate measure of recall "success" is straightforward: the number of affected products that are no longer capable of causing harm. In many recall situations, however, hazard elimination can be accomplished by a number of means, some of which cannot be tracked or added to the "success" statistics. For smaller, less durable, or lower value products such as many of those covered in toy recalls, simply discarding the product is the least burdensome and most effective way of eliminating the hazard. This is particularly true for programs involving toys, which often receive widespread attention from parents, but typically have very low reported effectiveness rates. CPSC's 1980 Task Force Report emphasizes that these other methods undertaken by consumers to render a hazard harmless but not included in the number repaired or returned may be particularly important in explaining low reported effectiveness rates for lower value products such as hand-held hairdryers (Tab B).

For larger, higher value products that have been in consumers' hands for an extended period of time, the normal life cycle of product retirements and replacements typically accomplishes a substantial measure of hazard reduction. In many cases, the process of product retirements and replacements actually provides a far greater degree of hazard reduction than is generated by the corrective action program. In one relatively recent (1998) recall of old baseboard heaters, for example, the manufacturer achieved an (expected) reported effectiveness rate in the low single-digit range. However, the normal life-cycle of these products meant that more than one-fifth (22 percent) of the units still in service at the time the recall was announced were removed from further use in each of the next three years. Three years later, fewer than half of the affected products were still in use, despite the low level of replacements under the program. In addition to these "natural" product retirements, there may be additional "induced" retirements, as consumers accelerate an impending replacement of the affected product with a newer, and in many cases, more capable, model that effectively accomplishes the remedy.

These alternative routes of hazard elimination are quantitatively significant in many high-profile recalls. Irrespective of what additional response is undertaken, these consumers have been made aware of the hazard that exists and the options and incentives available for

eliminating it. It would be reasonable to expect by the conclusion of a recall that a significant share of them will have taken action to eliminate the potential for harm, even if they have not met the formal requirements for being counted as having participated in the program.

Finally, it should be noted that manufacturers and retailers must ultimately rely on the good sense of consumers and on their willingness to accept personal responsibility for participating in a recall. In many instances, a complete assessment of recall effectiveness should include measures of the level of awareness about the corrective action program (e.g., likely number of product users who were exposed to a magazine ad or video news release), as well as the number of actual product returns or corrections.

A More Appropriate Measure of Recall Success

To sum up, the recall effectiveness rates commonly reported to evaluate the success of corrective actions are not usually based on appropriate measures of the size of the affected product population in use and the extent of hazard elimination. Without more information about the circumstances of a specific recall, injudicious reliance on conventional recall effectiveness rate statistics can produce a distorted picture of the success and potential for further improvement of corrective action programs. This bias is particularly serious for recalls involving products that have been in the hands of consumers for a long period of time, relative to the average useful life of the product. The age and type of product, the length of time in distribution, and the average service life all strongly influence both the number of remaining products that are potentially affected and the likelihood that users of these products can be notified.

For these types of product, a more appropriate measure of success, in our view, would be:

$$\frac{\text{Number of product hazards eliminated}}{\text{Number of products still in use}}$$

However, even this statistic does not provide a completely adequate benchmark for evaluating the effectiveness of recall programs. A fair assessment requires examination of product-, hazard-, and program-specific factors that contribute to, or impede, the level of hazard reduction that can be reasonably expected from a specific corrective action program. Specific factors that influence consumer response to recalls of a particular category of products (such as small toys or SCUBA gear) should also be noted.

## III. Data on Actual Program Effectiveness Rates

Access to data on the effectiveness rates achieved by specific recalls has been limited for the past two decades, because of a lack of more recent CPSC studies and reports on the subject and manufacturers' concerns about the release of proprietary product distribution and marketing

data. In a few instances information can be extracted from press releases or media discussions of the program. However, the recall-specific data do not cover a sufficiently wide range of hazards, product types, and distribution profiles to be useful in analyzing systematically the determinants of effectiveness for recalls since the early 1980s.

While effectiveness rate statistics for individual recalls have not been available for most corrective actions since the early 1980s, some summary measures are reported in both the draft ANPR and the CFA petition.[4] Both sources indicate that the overall effectiveness rate of CPSC product recalls in FY 1996-1997 was 16-18 percent, a level far below the 53-60 percent participation achieved in "fast track" recalls. The CFA petition attributes this disparity (properly, in our view) to differences in the average length of time that the affected products have been in consumers' hands. Manufacturers of products in current production, where many of the recalled units are still in identifiable distribution channels rather than in consumers' hands, typically select the fast track option.

The draft ANPR also reports average correction rates of around 25 percent for programs involving juvenile products and counter-top appliances—a rate that is significantly above the overall average effectiveness rates of 16-18 percent in FY 1996-97. However, this statistic appears to be at variance with publicly reported effectiveness rates for these products, at least in situations where most of the affected units were in consumers' hands. In Exhibit 1 we present specific data on recall effectiveness available for six appliance-related products that were entirely or largely in consumers' hands at the time of the recall. In contrast to the experience reported in the draft ANPR, all of these recalls were characterized by very low effectiveness rates. Even if the measurement adjustments for effectiveness rates that were discussed above are incorporated into the calculations, it is unlikely that most of these recalls would approach the 25-percent return rate.

There is a simple way to resolve this discrepancy. CPSC should make available the data used to produce its summary estimates of recall effectiveness in a format that is consistent with confidentiality guarantees afforded to manufacturers conducting recalls. Without this type of information, it is impossible to determine whether the sample of recalls on which the CPSC estimates are based is representative of product recalls generally.

## IV. Factors Influencing the Effectiveness of Recalls

In the absence of more recent analyses, the current state of knowledge about factors that influence the effectiveness rate that can be achieved by a particular recall program is still based

[4] The effectiveness rate estimates reported in this section were apparently calculated by dividing the number of units returned or repaired by the number of products distributed. The reservations we noted in Section II about using this ratio as a measure of recall success apply to these estimates as well.

in large part on two CPSC studies conducted in the late 1970s and early 1980s. Both of these studies show a high relationship between a product's distribution profile and the level of returns that were achieved. More recent anecdotal data suggest that the basic conclusions reached in these older studies about the relationship between the product's distribution profile and the level of returns are still valid. However, given the stark differences between the effectiveness rates quoted in the ANPR and those in previous CPSC reports, and the general lack of publicly available data on the performance of recent recall programs, a new, comprehensive study of recall effectiveness should be conducted before any new recall procedures are mandated. Absent this review, any action to impose new standards related to product registration cards would, in our view, be taken without an adequate basis in fact.

The 1978 Recall Effectiveness Study

In 1978 CPSC published the only comprehensive empirical study of recall effectiveness conducted by the agency to date. I directed this study, which was conducted by research associate Loren Lange, while heading the CPSC planning office. The study concluded that the length of time a product was in distribution and the proportion of the recalled product that was actually in consumers' hands at the time of the recall were factors that played a critical role in determining recall effectiveness. For example, four of the 97 cases in the CPSC study involved products that had been in distribution for over five years between first shipment and recall notification to CPSC. Effectiveness rates for these cases averaged two percent; the median effectiveness rate was only six percent.[5] There were 57 cases in this study for which more than 66 percent of the affected units were actually in consumers' hands. In these cases, the average effectiveness rate was only 11 percent. More important, it was "significantly lower than 11 percent" (the specific percentage was not provided in the study) for recalls where all of the affected products were in consumers' hands.

The Murphy-Rubin Recall Effectiveness Model

In the early 1980s, a statistical model of recall effectiveness was developed by CPSC's chief economist Paul Rubin and co-researcher Dennis Murphy (the Murphy-Rubin model) and privately published by the authors. Murphy and Rubin constructed the model by using data from over 100 CPSC recalls conducted in the late 1970s and early 1980s. Recalled products that were entirely in the hands of consumers were characterized initially in the Murphy-Rubin model by a predicted level of effectiveness on the order of ten percent. A significant reduction from this ten percent baseline level was estimated in the model for any recall in which there was a significant lag between the last date that the recalled product was placed into the chain of distribution and the date of the initial recall notice. In the model that Murphy-Rubin used to predict the effectiveness rate for any given case, for each additional year's lag between distribution and

[5] "Recall Effectiveness Study", CPSC, May 1978, Table 3-5.

recall, the expected return rate was reduced by another 1.3 percent from the ten-percent baseline.[6]

New Evidence of Limits on Effectiveness Rates

Participants at the 1999 CPSC Product Registration Conference provided new evidence that the potential for improving recall effectiveness rates is limited. The most striking example relates to a product for which the motivations for active consumer response should be very strong: recalls involving car safety seats for children. The draft ANPR cites the National Highway Traffic Safety Administration (NHTSA) Child Safety Seat Registration Program as support for strengthening product registration requirements. However, the draft ANPR did not report the results that have been achieved thus far by this program—an average product registration card return rate of no more than 30 percent of the covered products sold. This return rate represents an upper limit on the response rate that can be expected for products that do not have clear safety-related functions such as those that characterize child car seats.

In lieu of reporting on this experience, the draft ANPR cites statistics from an undisclosed sample of recalls involving catalog sales and those of major appliances that have average effectiveness rates "approaching in excess of 90 percent". While the CPSC offers this as evidence that direct notification can achieve nearly complete returns of affected products, the distribution profiles of the affected products are not reported. A more likely explanation of these high effectiveness rates, according to the past CPSC studies of effectiveness, is that the products were still in the chain of distribution or had only recently passed into the hands of consumers. Retrieving a product that has been in use for a few months at the time of the recall is much easier than securing returns of items that have been in use for much longer periods of time. As the age of the product increases, the accuracy of the contact information provided at the time of purchase diminishes dramatically, as noted elsewhere in this paper.

The Need for a New Study of Recall Effectiveness

Citing summary recall effectiveness rate statistics without providing the supporting details does little to advance our understanding of what corrective action programs can be expected to (and do) achieve. To evaluate whether the factors identified in the previous CPSC studies are still significant determinants of recall effectiveness will require a new study. I offered to conduct a full review of all of the relevant factors—assuming CPSC cooperation in release of adequate data to do so—at the 1999 CPSC Product Registration Conference. Two years later, it remains a critical need. CPSC should at the earliest possible opportunity develop an appropriate

[6] The Murphy-Rubin model also examined the impact of direct notification on effectiveness rates. An increase of ten percent in the number of consumers directly notified was associated with a four-percent increase in the number of returns. However, the use of other notification channels (press releases, newspaper advertising) besides direct notice was indicated using binary variables (0 = not used, 1 = used). Consequently, the direct notification percentages may have served as a proxy variable for the overall level of recall notification effort, rather than a measure of the specific percentage of consumers who were directly notified.

procedure for making adequate data available from its corrective action report files to facilitate this type of analysis.

However, this study should be undertaken with the understanding that there is not likely to be any "magic bullet" solution to achieve substantial increases in return rates for product recalls. On the contrary, evidence of consumer response from both past recall programs and from more general marketing and response studies strongly suggests that effectiveness rates are not likely to be significantly increased by corrective action programs involving products which have been in distribution for long periods of time. This conclusion holds even in cases where relatively compelling incentives—in the form of bounties—were offered for recall participation. There have been a couple of notable recalls in which the correction rate exceeded *100 percent* of the units estimated to still be in use. These situations involve product "resurrections", or retrievals of scrapped units, to take advantage of very generous incentives for returns. A 1984 recall of thirty-year-old water heater valves is an early example, as is a more recent program that featured a $250 offer for the return of affected propane heaters. A bounty set too high introduces additional motivations for participating in a recall that may not be related to a real reduction in risk to consumers.

## V. Consumer Response to Recall Programs and Other Rebate/Refund Offers

There are real difficulties in translating consumer awareness into product returns. In some instances, these difficulties may reflect widespread consumer disregard for the message being communicated. In others, consumers may simply have chosen not to undertake additional steps to receive the incentive payment offered after having taken effective action to eliminate the hazard. Data are available from three high-profile corrective action programs that underscore the importance of taking these difficulties into account when evaluating the success of recall efforts.

Evidence from Recall Programs

One early example of this slippage between awareness and action is provided in a 1980 report of the CPSC recall effectiveness task force. According to the report, over half (55.6 percent) of consumers who knew about the asbestos issue in the widely publicized hair dryer recalls of the late 1970s were not motivated to check their own hair dryers to see if they had an affected product.[7] Measured return rates were even lower than this statistic would suggest, amounting to only 4.5 percent of the total units sold. In many instances consumers were willing to discard the product (with or without checking it for the hazard) without applying for the refund that was offered.

[7] "Report of the Recall Effectiveness Task Force of the Consumer Product Safety Commission", CPSC, August 25, 1980, p. C-21.

A lower-than-expected level of product returns was also evident in a coffeemaker recall in the early 1990s. In this high-profile recall, which received national media attention, at least 30 percent of consumers who: 1) called the toll-free number, 2) indicated that they owned affected model coffeemakers; and 3) received postpaid shipping cartons, failed to return the product for a $25 refund. Because many of these coffeemakers were at or near the end of their expected useful life, many of these consumers may have simply discarded the product without seeking the refund.

Finally, consumers may elect not to participate in recall programs where the perceived risk of the hazard is very small. For example, many recalls involve potential misuse of items by children. Households that do not have children present but have the affected product (e.g., lead in paint) may reasonably decline to participate in the corrective action, but this lack of response does not have any effect on the level of hazard reduction achieved by the recall.

One important problem is that there is very little evidence on consumer response available from comparatively recent recalls. An updated data collection and analysis effort is badly needed to assess issues such as the best channels for promoting consumer *awareness* of recalls and which media or programs are most likely to stimulate actual consumer *response*. The last systematic efforts to study these factors were in the 1970s and early 1980s.

Industry Experience with Rebate Redemptions

These examples of "incomplete" consumer responses to recall programs are not surprising, but rather are entirely consistent with published experience that commercial fulfillment contractors have had with refund and rebate redemption rates. While these estimates are not specifically related to recalls, they share many of the same features that help to explain consumer response patterns. At least one firm, TCA Fulfillment, publishes a table of expected return rates that vary with both the retail price of the product and the amount of the rebate or refund offered. Even for products with net-to-zero offers (i.e., those that are free after the rebate), return rates range from only 15 percent (for products sold for $5) to 50 percent (for $50 products). These return rates are for promotions involving newly purchased products. Participation rates—at least as they are measured by returns of products and/or applications for incentive payments—achieved by corrective actions for products that have already been in the hands of consumers for an extended period of time, rather than newly purchased, will be much lower. Using this pattern of redemption rates as a guideline, achieving returns in the 10-15 percent range would represent the maximum consumer response that can be expected for products nearing or at the end of their useful service lives.

## VI. Consumer Response to Product Registration Requests

The basic premise of the draft ANPR and CFA petition is that PRC return rates are low now, but would be dramatically improved by added mandates. We disagree that current low rates can be improved dramatically by additional mandates. Indeed, evidence suggesting the opposite is provided both by current manufacturer experience and the results of a series of tests conducted by a leading PRC database contractor.

Toro PRC Returns Experience

The draft ANPR cites PRC return statistics provided by the Toro Company at the 1999 Product Registration Conference. As with the "approaching 90 percent effectiveness" statistic discussed above, this citation is characterized by omission of relevant supporting details. Specifically, the draft ANPR reports that "the return rate for Toro postage paid cards presently included with their mowers sold at Toro dealerships is 75-85%".

Several relevant facts cited by Toro at the 1999 Conference were omitted from the discussion in the draft ANPR, however. First, the fact that *the retailer collects and returns the PRC at the point-of-sale* is not mentioned. The retailers involved in these registrations are closely affiliated with the manufacturer, in contrast to the more independent mass merchandisers of most consumer products.

The draft ANPR also fails to report that the average price of the products covered by the Toro program is several hundred or even thousand dollars. Elsewhere in its testimony at the Product Registration Conference, Toro indicated that the company averaged a 35-40 percent return rate for mowers sold through mass retailers and a 10-15 percent return rate for lower value products such as trimmers and blowers. In our view, these statistics provide more relevant benchmarks for the upper limit of the fraction of PRCs that can be collected. Moreover, reaching this benchmark is not possible except in the case of relatively high-value products with an extended useful service life, as other recently available research on the PRC issue confirms.

The Equifax/DMS Study

Additional data on PRC return rates are available from a recent study by Paul Wollerman of Equifax DMS Data Services.[8] Equifax DMS had been collecting PRCs and building consumer databases since 1975. The study summarizes present company experience, and also reports on a number of experiments run to test the impact of PRC modifications on response rates.

Wollerman reported a wide range of variation in PRC return rates across product categories and price ranges. The largest single determinant appears to be product price:

[8] "Findings from Product Registration Card Research Related to Proposed Regulation by CPSC", Paul Wollerman, Equifax DMS Data Services, 2001.

| Price Range | Product Types | Return Rate(s) |
|---|---|---|
| High ($800) | Refrigerator | 38 percent |
| Intermediate ($300-480) | Color TV<br>Deluxe Gas Grill<br>Pro Model Chain Saw | 18-31 percent |
| Low ($20-40) | Beard Trimmer<br>Blender<br>Electric Toothbrush<br>Toaster | 3-9 percent |

These results show a striking correspondence with the rebate redemption estimates provided by TCA Fulfillment. For example, the lowest rebate ($5) offered for a $30 product generated an average 15 percent response rate, which runs somewhat (but not dramatically) above the range reported by Equifax DMS for return of PRCs without incentive payments. The impact of higher value products on consumer response was also confirmed by the TCA estimates, which showed that a rebate equal to 25 percent of the purchase price elicited redemptions from only one-fifth of those buying a $20 product. One-quarter of the rebates available for $100 products were redeemed, and more than one-third of consumers purchasing a $200 item redeemed the rebate.

Impact of Changes in the PRC on Response Rates

Wollerman's study also reports the results of several response-rate experiments conducted over the past ten years. Separate trials involved provision of contest-entry incentives, use of postpaid cards, removal of marketing information, and addition of language stressing the safety-related reasons for returning the card.

Contrary to the assumptions underlying the CFA petition and the CPSC draft ANPR, most of these trials elicited relatively modest changes in response rates. Interestingly, the size of the impact was more strongly influenced by the price of the product involved than by the specific changes in the PRC that were tested:

| Price Range | Alterations Tested | Change in Response Share |
|---|---|---|
| High ($800) | Material Incentives<br>Altered Language<br>Reduced Length | -2.1 to +3.4 percent |

| | | |
|---|---|---|
| Intermediate ($300-480) | Postage Paid<br>Deluxe Gas Grill<br>Altered Language<br>Reduced Length<br>Privacy Assurance | -2.5 to +3.3 percent |
| Low ($20-40) | Material Incentives<br>Postage Paid<br>Altered Language | +0.2 to +0.8 percent |

These experiments show very modest gains (a maximum increase of 3.5 percent in response share) in return rates for high- and intermediate-value products. The incremental effectiveness of these changes for registration of low-value products was barely discernible.

Taken as a whole, these results suggest that significant increases in PRC returns, such as that achieved by the NHTSA car seat campaign, are possible only for products that are strongly related to safety issues in the minds of consumers.

## VII. The Impact of Population Mobility on the Effectiveness of PRCs

Relying on expanding use of PRCs to increase recall effectiveness rates is also limited by the mobility of U.S. consumers. While product registrations are tied to the consumer addresses at the time of purchase, nearly one out of every six people (16 percent) moves each year. In addition, there are active second-hand markets for both categories of products—juvenile products and countertop appliances—that would be covered under the requirements of the draft ANPR. PRCs cannot directly reach consumers in these secondary markets (although they might be reached through other channels).

These limitations mean that PRCs will be least useful as a notification tool for recalls that currently have low expected effectiveness rates—i.e., those involving products that have been in the hands of consumers for an extended period of time.

## VIII. New Channels for Increasing Recall Notification and Awareness

Several new channels for increasing recall notification and awareness look promising, though their full potential cannot yet be fully determined. Among these are video news releases and various Internet-based means for notifying consumers.

Video News Releases

In the past four years, a significant number of corrective action programs have included production and distribution of video news releases (VNRs). The CPSC Web site lists nearly 100 VNRs, 43 percent (41 of 96) of which relate to recalls of juvenile products that are included in the scope of the draft ANPR. VNRs provide a potential means of notifying affected consumers who cannot be reached through conventional print media.

One problem faced by manufacturers, however, is getting television stations to use the VNRs that they distribute. In a paper presented at the 1999 CPSC Product Registration Conference, Dirk Gibson indicated that the distribution of these releases was not always followed by actual broadcast—of the 700 television stations which were sent a copy of the CPSC Recall Round-up VNR, only 140 stations (20 percent) broadcast it.[9]

There is now more experience, and presumably data, available on the levels of exposure achieved by various VNRs. It is important for this information to be made available, on a

"product de-identified" basis, to facilitate an assessment of VNR's potential for achieving significant improvements in recall effectiveness.

The Internet

The emergence of both general and specialized Internet safety and recall announcement sites also warrants special mention. Sites such as RecallAnnouncements.com and SafetyAlerts.com provide enhanced search capabilities for consumers who are interested in recalls of entire categories of products. These sites not only improve the publicity of recently announced recalls, but, perhaps more importantly, provide consumers with the ability to check on specific products long after the date when a particular corrective action was first announced. The CFA itself recognizes the value of these efforts, having developed SafeChild.net to provide a central clearinghouse for recall announcements and other safety information relating to children's products. Efforts such as these are particularly important in helping consumers to identify older products, such as cribs and car seats, that do not meet current safety standards, but which cannot be located with any form of direct notification.

In addition to sites that focus on publicizing recall announcements, online product registration is beginning to be used for products beyond those in the computer and entertainment sectors in which it first appeared. Also on the horizon are centralized online product registration sites which would make it possible to combine purchase and registration activities in a single transaction. This approach may offer potential economies of scale to consumers who are

[9] "An Academic Communication Perspective on Enhancing Product Recall Effectiveness", Dirk Gibson, Ph.D., Department of Communication & Journalism, The University of New Mexico, March 1999.

interested in being contacted in the event of a recall, but who do not wish to take additional time and effort to complete and return PRCs for each individual product purchased.

Other means of promoting recall awareness using the Internet remain to be explored. Sponsored searches, banner ads and links at portal sites, opt-in e-mail lists and Usenet groups are all approaches that have the potential to expand the level of consumer awareness about recall programs.

## IX. Conclusion

As we have detailed in this paper, the conventional measurement of recall effectiveness typically used by the CPSC has conceptual problems that limit its usefulness as a benchmark to evaluate the success of various types of corrective action programs. There is a paucity of recent data on both recall effectiveness and on consumer notification and response behavior. Addressing these limitations would provide a better foundation for assessing what additional steps would be most likely to produce the widely shared objective of improving recall effectiveness rates.

Until this is done, it is entirely unclear from the data that are available whether the remedies called for in the CFA petition and in the CPSC draft ANPR would accomplish this objective. Indeed, some of the limited evidence available suggests otherwise. More specifically, the assumed effectiveness of the proposed mandates concerning use of Product Registration Cards is simply not supported by the data that are currently available.

About the Author

Dr. Edward J. Heiden has been president of Heiden Associates, Inc., since 1981. He has directed and published numerous studies in the areas of product safety and micro-economics, and has presented analysis and testimony in many federal and state court cases, as well as regulatory proceedings and negotiations. Prior to formation of his firm, he was chief planning economist for the Federal Trade Commission and the U.S. Consumer Product Safety Commission (CPSC), as well as the White House Office of Consumer Affairs. He has also served on the Economics faculty at the University of Wisconsin (Madison) and Director of its Center for Firm and Market Behavior. While at CPSC he directed the agency's first major study of product recall effectiveness. He holds a doctorate in Economics from Washington University (St. Louis).