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Predicting the Effects of Food Cancer Risk Warnings on Consumers

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I. INTRODUCTION

California residents initiated a sweeping expansion of the scope of labeling policies through their endorsement of a state-wide referendum known as Proposition 65. This statute, entitled the Safe Drinking Water and Toxic Enforcement Act of 1986, was passed by California voters on November 4, 1986.1 Among the many requirements of this Act is the stipulation that all food products containing significant amounts of chemicals known to cause cancer or that are reproductive toxicants must have these effects made known to consumers through a hazard warning program.2

In this article I will analyze the implications of Proposition 65 as well as specific aspects of the interpretive regulations that have been issued by the state of California to enable firms to assess how they should comply with these new statutory requirements. The precise requirements of the implementing regulations have been finalized only recently,3 and the final arbiter will be the courts since enforcement of the statute will be handled through judicial action. Thus, the regulatory guidelines are only intended to provide general indications of the actions by manufacturers that will be sufficient to achieve compliance status.

Even if the precise details of the compliance requirements change after judicial review, examination of the approaches currently being taken under this proposition is instructive both from the standpoint of determining what effect such a labeling system will have on consumers as well as its likely effect on other labeling efforts in the future. In all likelihood, there will eventually be federal regulation of cancer risks in food. The food industry advocates federal preemption because of the cost that will be imposed by having a wide variety of state warning requirements that will have to be met.4 In addition, if there is to be a warning system in the

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1. CAL. HEALTH & SAFETY CODE § 25249.5-13 (Deering 1986).
2. Id. § 25249.6.
4. This is the focus of efforts of the Food Safety Council which is headed by George Burditt, Esq., of the law firm of Burditt, Bowles, Radzius & Ruberry, Ltd.
U.S., there are strong policy rationales for federal involvement including the advantage of establishing a sound scientific basis for a warning system, and the desirability of having a uniform and generally understood system to be applied by all states.

By February 27, 1988 firms marketing products in the state of California that either cause significant risks of cancer or reproductive toxicity must have provided warnings to consumers. The focus of this article's analysis will be on the cancer warning component of the Proposition 65 requirements. Similar kinds of issues are raised by the reproductive toxicity requirements. Although most of this article is based on the implications of related research on hazard warnings, section VI presents new and quite striking survey results on consumer responses to the Proposition 65 approach that corroborate these findings. The general implication of these results is that the Proposition 65 warnings are ill-suited to conveying the low levels of risks involved.

II. WHAT DO WE KNOW ABOUT THE EFFECT OF LABELS?

A major concern for manufacturers is how the warning program that is mandated by Proposition 65 will influence consumer purchase decisions. Before attempting to assess this outcome as it specifically relates to the warnings that will be used under Proposition 65, it is helpful to review what is known about the effectiveness of labeling as a policy alternative. The effects of two of the most prominent labeling efforts, i.e., for saccharin and cigarettes, are difficult to assess because a number of other policy events have occurred concurrently. There has been substantial attention in the media on these products' risks. In the case of cigarette labeling, the Surgeon General's reports as well as the restrictions which have been imposed on advertising for cigarettes have received wide media attention. The net effect of these efforts has been to depress sales of these products.

A more reliable basis for assessing the influence of labels is to consider the results of controlled experiments using different product labels. Consider first the results in Table 1 for labels on bleach (all tables referred to in this article are contained in an Appendix placed at the end of the article's text). Four different hazard warnings were examined: (a) bleach with a label for which all hazard warning information was purged, (b)
the current Clorox label, (c) the current label on the Kroger brand of bleach, Bright, which has an appealing format for the label, and (d) the Test label, which is a label that has been redesigned to organize the risk and precaution information more systematically. The first two precautions listed in Table 1 pertain to the importance of not mixing bleach with either toilet bowl cleaner or ammonia-based cleaners since doing so will form chloramine gas, which is the leading nonsuicidal source of gas poisonings among adults.9

For each of these two precautions better designed labels lead to more frequent rates of precaution than labels without any warning whatsoever. The final precaution—the importance of childproofing bleach—reflects a similar pattern in that the warning that the product should be stored in a childproof location increases consumers' intentions to take this precaution by one-third. What is particularly striking is that even in the absence of a hazard warning almost half of all consumers would store the products in a childproof location, a result that is no doubt due in part to the fact that the consumers have acquired general information about classes of consumer products that need to be kept out of the reach of children.

Similar results have also been found for drain opener, which are reported in Table 2. As in the case of bleach, a product for which all warnings were purged from the label was examined. In addition, the experiment considered a label modeled after the current Drano label as well as a redesigned label designated the Test label. Including hazard information increases the frequency with which consumers wear rubber gloves and store the product in a childproof location; the Drano label was most effective in this regard, no doubt in part because seventy-eight percent of the label area was risk-related.

Labels can influence behavior in an intended direction, but they will not lead all consumers to undertake the precaution indicated. In the case of precautions that require effort, it may not be desirable for everyone to undertake a precaution. For example, people without children need not store a product in a childproof location. Similarly, people who find wearing rubber gloves burdensome may not take this precaution and may rationally choose to incur the small risks that they will face by failing to do so. An additional portion of the people who choose not to take precautions no doubt reflect in part the consumer population for whom labels do not serve as an effective risk communication device. Not every consumer will read the label carefully and will make sound decisions based upon it, but the absence of a perfect labeling program does not imply that right-to-know policies cannot serve a constructive role.

The food cancer labeling policy will, however, be of a different nature than the standard label in that the principal intent of the policy is to

9. Id.
convey risk information that will alter individual exposure to carcinogens.\textsuperscript{10} To reduce this risk the consumer cannot undertake protective actions such as wearing rubber gloves. To be effective the warning must either alter the purchase decision or the decision to consume the product after it is purchased. Thus, the issue is what effect if any will hazard labels have on decisions to engage in potentially hazardous activities such as consuming risky products?

A particularly detailed analysis of this issue was done for workers' responses to hazard warnings, which shares many of the fundamental aspects of the consumer choice case. Table 3 summarizes the principal information regarding this experiment. Four different labels were used for different hazardous substances: sodium bicarbonate, an industrial chemical called chloroacetophenone, asbestos, and TNT. Sodium bicarbonate is a risk-free substance, whereas the others pose different levels of health risks, with chloroacetophenone being the least risky. The sample consisted of workers in the chemical industry; in each case the worker was told that this particular chemical would replace the chemicals with which he now worked.

The first row in Table 3 gives the risk level assessed in terms of the annual chance of an injury or illness from the worker's current job exposure. After being given the risk information the workers revised their risk perceptions in the expected manner, as is indicated by the risk information in row two of the table. Workers who were given the sodium bicarbonate label revised their risk perceptions downward to .06, which was identically equal to the accident rate in the chemical industry in that year.\textsuperscript{11} Other workers raised their risk perceptions, with the greatest risk perceptions coming from the workers who had to work with asbestos and TNT, and who viewed the risks posed by their jobs as equivalent to facing a risk of one chance in four or greater of being injured.

Once faced with these greater risks, the workers would not continue to work on these jobs unless they were compensated an additional amount. As the data in Table 3 indicates, additional compensation ranged from $0.00 for workers who worked with sodium bicarbonate to $5,158 for workers who worked with TNT. In addition, in the absence of compensation many workers expressed a desire to quit their jobs; up to seventy-three percent of the workers would make a serious effort to find work elsewhere. In addition, particularly for high risk exposure to asbestos and TNT, very few workers indicated they would take the jobs again if they were not given additional compensation. As a result, there was a substantial market response to hazard warning efforts.

\textsuperscript{10} Calif. Health & Safety Code § 25249.6.
\textsuperscript{11} More specifically, the accident rate for the chemical industry was 0.057. See U.S. Bureau of Labor Statistics, Occupational Injuries and Illnesses in the United States, 1982, at 13 (1984).
There will, of course, be a similar kind of price response to food risk labeling. Table 4 summarizes the change in the price levels that consumers are willing to pay for bleach or drain opener that poses annually an extra risk of injury of one in two million. The injuries involved in the test are less severe than the cancer risks that are addressed by Proposition 65. However, even these small risk changes are likely to elicit a substantial response, ranging from $.06 to $.21 per bottle. Although the absolute magnitude of these price responses is not huge, the risk-change amounts involved are quite small.

To put it in perspective, one might want to take a look at the implicit value consumers attach to each injury avoided. In the case of chloramine gas poisonings for which the consumers needed a $0.15 price cut to accept the slightly higher rate of injury, this risk-dollar tradeoff reflects an implicit value of each poisoning equal to $300,000. This is a considerable sum in view of the temporary nature of most chloramine gassings.

These responses can be contrasted with much more modest implicit valuations that were obtained in a sequel to this experiment in which the risk levels were higher. When consumers were told that the base risk was 15 poisonings per 10,000 households, then reducing the risk of chloramine gassings by a probability of 1 in 10,000 was an improvement in the product that consumers would be willing to pay $0.09 per container to achieve. Thus, similar price effects are obtained from changes in the probability on the order of 1 in 10,000 as is obtained when consumers are told that the change in the probabilities involved is 1 in 2,000,000. The similar dollar responses to quite different levels of risk leads to the implicit value of health outcomes of a chloramine gassing of $912 in the sequel as opposed to $300,000 when smaller risk increments are examined.

This stark difference in the nature of the experimental results depending on the risk levels involved reflects the general inadequacy in the way in which individuals process risk information. It is well known that individuals experience serious difficulties in dealing with low probability events. Much more is known about these difficulties than simply concluding that there are problems with individual choice. In particular, there is a systematic tendency on the part of individuals to over-assess low probability events and, when making trade-offs between money and small

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12. The 1 in 2,000,000 number was picked for experimental purposes and was given to the survey participants as a "fact." This figure was based on estimates using available poisoning statistics, but it should be emphasized that this number may not capture the true risks exactly. See Viscusi & Magat, supra note 8, at 88.


14. Id. See also Viscusi & Magat, supra note 8.

15. See Viscusi & Magat, supra note 8.

16. See id. at 93-96.
risks, individuals act as if these small risks are larger than they actually are.\textsuperscript{17} Thus, in the case of the consumer experiments just discussed, a risk of 1 in 2,000,000 is treated as being roughly equivalent to a risk of 1 in 10,000, as individuals have a difficult time in processing refined distinctions between very minuscule probabilities such as this.

This aspect of behavior will define an essential element of the behavioral context in which any cancer risk labeling program will operate. In particular, when individuals are informed of small risks there will be a tendency for them to over-react to the information and to treat the risk as being greater than it actually is. It will be very difficult to convey information to people in a meaningful fashion about very low probability risks. Perhaps the major danger from any risk-communication effort is that instead of informing people these programs will serve to unduly alarm them and cause an overreaction to the risk information. Recognition of this behavioral phenomenon is essential to structuring a sound risk policy and will be a central element of this article's review of California's Proposition 65.

III. The Requirements of California’s Proposition 65

Under Proposition 65, manufacturers are required to communicate to consumers any “significant” risks associated with their product.\textsuperscript{18} In addition, this communication must be in a “clear” and “reasonable” fashion.\textsuperscript{19}

The significant-risk threshold is an interesting concept that unfortunately has been interpreted in a narrow manner by the state of California.\textsuperscript{20} What risk is significant is essentially a policy question that depends on how people will respond to this risk. Thus, scientists cannot state whether a lifetime risk of cancer of 1 in 10,000 or 1 in 100,000 is significant. The question of where to establish a significant risk threshold depends on what kinds of risks a society is willing to face and not how many zeros are in the significant-risk statistic.

The state of California is currently interpreting significant risk in terms of a lifetime cancer risk of 1 in 100,000.\textsuperscript{21} Even if this were the actual policy threshold, it would be too low a risk level to pose truly significant risks for individual decisions. If individuals with typical attitudes towards risk-dollar tradeoffs fully understood the risks involved and could act upon them, they would alter their purchase decisions by under a penny for a product they purchased weekly and which posed a lifetime risk of 1 chance in 100,000.\textsuperscript{22} Thus, a risk of 1 in 100,000 might well be

\begin{enumerate}
\item Id.
\item CAL. HEALTH & SAFETY CODE § 25249.11(c).
\item Id. § 25249.6.
\item Emergency Regulations, art. 7, to be codified at CAL. ADMIN. CODE tit. 22, §§ 12701-12713 (1988).
\item Id. art 7, § 12703(b), to be codified at CAL. ADMIN. CODE tit. 22, § 12703(b).
\item The only additional assumptions involved in making the calculation were: the implicit value
viewed as the *de minimis* risk level rather than a significant-risk threshold. Nevertheless, this threshold is more reasonable than the 1 in 1,000,000 threshold that dominated policy discussions prior to the issuance of the final regulations.

Unfortunately, California has adopted a variety of risk assessment assumptions that are intended to be "conservative," such as the use of a linear dose-response relationship, reliance on studies of the most sensitive animals, and use of the upper ninety-five percent confidence limit. Use of the animal studies that display the most sensitivity to a chemical exposure will overstate the average animal response and may be a misleading guide to the likely human response. An even more flagrant distortion is reliance on the upper end of the ninety-five percent confidence level of the risk level. The significant risk level should be based on the mean risk assessment—the average risk implied by the evidence—not the upper bound of what this risk conceivably could be. Such a procedure necessarily distorts the implied risk level and leads to greatly overstated risk levels in situations where scientific evidence is most uncertain. This risk assessment procedure is not a minor statistical quirk, but instead is a pivotal feature of a policy that establishes a flagrantly distorted "scientific" basis for the warning program.

These biases greatly distort the true level of risk, which may be many orders of magnitude below 1 chance in 100,000. Thus, consumers will need to be warned about risks that actually may pose an actual lifetime chance of cancer of 1 in 100,000,000. The reliance on a fundamentally dishonest scientific basis for an informational policy jeopardizes the program and its credibility, and at the very least also misleads consumers and distorts their consumption decisions.

IV. CONTENT OF THE WARNING MESSAGE

Rather than attempt to discuss the design of an appropriate hazard communication policy that is based upon a distorted scientific basis, it is simpler to assume that the scientific issues have been addressed in a statistically unbiased manner even though this is certainly not the case with the legislation in California. Suppose that the true risks of the foods under consideration involve a lifetime risk of cancer of at least 1 in 100,000. How then should the hazard communication effort be structured? The two issues that must be resolved are the content of the warning and the placement of the warning.

The first entry in Table 5 summarizes the wording of the draft of the...
warning that is proposed by the state of California. In the case of food products, the warning states first the human hazard signal word WARNING, which will be followed by a succinct fourteen word sentence that indicates that the product includes a chemical known to cause cancer. By almost any standard, this is a very strong warning. Before discussing its appropriateness, it is helpful to address what criteria would be used to assess the effectiveness of the warning message.

The basic standard this article will adopt is that a warning will be most successful if it conveys to consumers risk information in an accurate and effective manner. Thus, it is desired that individuals read the information, process it, and form accurate assessments of the risk based upon the warning message. These risk assessments in turn will then affect the consumer’s purchase decision.

Perhaps the most important aspect of this approach to assessing the effectiveness of the warnings is that the basic criterion for a warning is that it should provide information which is as accurate as possible. The objective is not to formulate the strongest and most alarming warning. If the objective were to stop consumers from purchasing the product altogether, these products should be banned. Indeed, there are a variety of federal regulatory efforts that eliminate the truly substantial risks that some food products could possess. Thus, the policy question is whether the content of the warning is appropriate given the level of risk that is involved.

In the case of the food warning that has been suggested under Proposition 65, the content of the warning is wholly inappropriate for the modest levels of risk involved. It is instructive to bear in mind that even with unbiased risk assessment procedures the California risk warning threshold requires that consumers be warned of risks that should alter their willingness to buy particular products by as little as a penny. Thus, the warning program is picking up what are essentially chemical residues that pose only minimal risk of cancer. Ideally, the content of the warning should reflect the low levels of risks involved.

Instead, the legislation requires a warning that begins with a very strong human hazard signal word: Warning. In terms of the hierarchy of human hazard signal words, “danger” is the most severe, “warning” is the second most severe, and “caution” represents the next tier of the hierarchy.28 For lesser risks, one might wish to forego use of a human hazard signal word altogether. The use of the “warning” terminology conveys the impression of a high level of risk which is certainly not the case given the risk assessment threshold that has been set for the California hazard communication system.

25. This ordering is the generally accepted hierarchy. See, e.g., AMERICAN NAT’L STANDARD INST., SPECIFICATIONS FOR ACCIDENT PREVENTION SIGNS, ANSI Z35.1-1972, at 8 (1972).
The verbal description of the risk following the signal word is also quite strong. Essentially, the claim is that the product contains a chemical known to cause cancer. The use of the cancer terminology evokes a strong response among readers in terms of the risk that is perceived to be present. In addition, the warning does not indicate that our knowledge of the risk may be highly uncertain, or that the level of risk may be very low. The uncertainties involved in extrapolating results from animal experiments and applying them to humans are not taken into account. In addition, there is no impression given whatsoever that the risk levels involved might be as small as 1 chance in 100,000. Rather, the risks are portrayed as being entirely nonstochastic. "This product causes cancer" is the essential message, not that there is 1 chance in 100,000 that a lifetime of consumption of this product will cause cancer.

The substantive content of the warning will inevitably lead to consumer overreaction to the risks that are being posed. First, even if individuals were given accurate information regarding the risk, which is difficult to do because it is hard to tell consumers technical information, there will be a systematic tendency to overreact to the information. Not only will consumers overreact to what might have been accurate information, but this tendency toward overreaction will be augmented by the use of a human hazard signal word that is totally inappropriate and by a formulation of a warning message that is appropriate only if the risks were much greater than they actually are.

By specifying this warning content in its interpretive regulations California has provided firms with strong incentives to adopt this wording because if they do not do so they face a greater risk of a court challenge. At some point, a court challenge does seem appropriate, however, since the proposed warning content does not satisfy the requirements under the Act that the warning be "reasonable." In particular, the proposed system may overwarn consumers rather than give accurate information that would foster sound decisions.

It is possible to err in either direction with respect to the terms of the unreasonableness of the warning. On the one hand, a warning could be worded in such an innocuous fashion that consumers ignore it altogether; it is this chance of underwarning that is a primary concern of the environmental lobbyists who were the main supporters of Proposition 65. With respect to the policy outcome, California is erring in the opposite direction in terms of reasonableness. Products with minimal risks are required to bear a warning that conveys to consumers that the risks are very substantial indeed. Such warnings will be required unless one can show that a lifetime consumption of a product containing a listed carcinogen poses no
significant risk. It is no more reasonable to distort consumers' perceptions in an overly alarmist fashion than to lull them into complacency.

V. PROPOSITION 65 FOOD WARNINGS VS. OTHER WARNINGS

It is instructive to compare the proposed warnings for food in California with the warnings for other sources of carcinogens. In the case of food products sold in California, the warning must be an on-product label, some other product-specific warning such as shelf labeling, or a system of information (e.g., signs, ads, toll-free numbers, etc.) that provides clear and reasonable warning. The warnings that have been proposed for restaurants and occupational exposures are much more broadly based. The second warning appearing in Table 5 is for restaurants, whereby restaurants simply must post a sign which states that they sell some products that cause cancer. In terms of assisting consumer choice, a broadly based warning sign such as this would be of no assistance to enable consumers to make noncancerous decisions from a restaurant menu. Should they avoid the corned beef sandwich, or was the risk at the restaurant only from the apple juice that was served?

Similarly, in the case of occupational and environmental contaminants, firms need only post a sign noting that the general area contains chemicals that cause cancer. Once again, the warning is broadly based and need not be focused on any particular exposure. This wide approach is particularly striking since the more severe chemical exposures that are likely to be encountered are environmental and occupational, and not risks from food. It is the more modest risks in the spectrum of hazards that have been targeted for detailed product-specific warnings. Sellers of consumer products cannot post a general sign warning shoppers that the store sells products that may cause cancer but must adopt a system that leads to "identification of the product at the retail outlet in a manner which provides a warning." Consumers will encounter a hazard communication system that conveys a series of such warnings for each product or class of products that pose such risks. The overall character of the warning system for food products is more severe than for other classes of products even though the risks posed by foods sold in the grocery store are considerably less than those posed by other classes of regulated hazardous products. The emphasis of California's warning program is unbalanced with the direction of the emphasis being the opposite of what it should be given the risk levels that are involved.

As a final reference point for assessing the overly alarmist character of

26. CAL. HEALTH & SAFETY CODE § 25249.10(c).
27. Emergency Regulations, art. 6, § 12601(b)(1), to be codified at CAL. ADMIN. CODE tit. 22, § 12601(b)(1).
28. Id. art. 6, § 12601(c), to be codified at CAL. ADMIN. CODE tit. 22, § 12601(c).
29. Id. art. 6, § 12601(b)(1)(B), to be codified at CAL. ADMIN. CODE tit. 22, § 12601(b)(1)(B).
the California warnings, compare the Proposition 65 warnings to the other food product warnings that already exist. Table 5 includes the text of the saccharin warning that appears on all food products that include this low-calorie sugar substitute. The same kinds of overzealous risk assessment procedures that will be used to determine whether a food product has a risk of 1 chance in 100,000 or more yielded the results that saccharin exposures posed an individual lifetime risk of cancer of 1 in 2500.30 Thus, saccharin products pose a risk that is believed to be forty times greater than the risk threshold for the California hazard communication system.

Yet, despite the substantial difference in the severity of the risk, the warning that has been used for saccharin is much milder than the warning used for food products sold in California. The content of the warning (which appears in the fourth group in Table 5) has two distinct differences from the Proposition 65 food warnings. First, no human hazard signal word, such as WARNING, has been used for the saccharin warning. The absence of such a signal word implies that the risk is of lesser consequence. In addition, the clearcut conclusiveness of the risk warning as in the case of Proposition 65’s labeling requirements for food products is absent in the case of saccharin warnings. The consumer using saccharin does not continue to do so after reading that the product necessarily causes cancer. Rather, the warning includes appropriate caveats such as the product “may be hazardous to your health,” with the implication being that it will not necessarily be hazardous to your health. Thus, an attempt is made to convey that this is a probabilistic relationship, not a certain link. Also, the fact that it is not known that saccharin necessarily causes cancer in humans is indicated at least implicitly as the warning notes that this product has been found “to cause cancer in laboratory animals.”

Although the saccharin warning is weaker, it is not necessarily inappropriate. After the advent of the warning and the attendant publicity concerning the saccharin test results, there was a substantial drop in the sale of saccharin products.31 One would not expect there to be a complete disappearance of a market for saccharin since this was a valuable consumer product for dieters, particularly before the entrance of Nutra-Sweet into the market.

When consumers attempt to interpret the Proposition 65 food warning, they will do so in terms of other similar classes of warnings they have been given. The warning does not tell them a precise probability, but gives a general impression about the riskiness that will only be useful in enabling consumers to classify products in terms of differing degrees of

hazard. The California system all but ensures that consumers will place all food products bearing the warning in a category that represents a more severe risk than saccharin even though such a conclusion is likely to be entirely inappropriate.

Perhaps the most dramatic comparison to be made is with cigarettes. Cigarettes have long been cited as one of the main voluntary consumer risks; the potential hazards of cigarette smoking have been known by consumers for decades.\(^{32}\) In addition, for over two decades there has been an annual assault on cigarettes in the media following the issuance of the Surgeon General’s reports.\(^{33}\) This media assault has been accompanied by a widespread discussion about the health aspects of cigarette smoking in the press, selective bans on cigarette advertising,\(^{34}\) and more recently in major policy initiatives on cigarette smoking in public places. Although the scientific studies underlying the cigarette smoking risks are subject to the same kinds of biases discussed before, it is noteworthy that these risks are believed by scientists to be of a different order of magnitude.\(^{35}\)

In that regard, let us compare the content of the Proposition 65 food warning with the various cigarette warnings. Certainly the Proposition 65 warning is stronger than the 1965 cigarette warning label (listed in Table 5). The food warning includes the human hazard signal word WARNING, whereas the cigarette warning includes the milder cautionary word “Caution.” In addition, whereas the food cancer warning indicates that the product is known to cause cancer, the cigarette warning only indicates that the product “May be Hazardous to Your Health.” The cigarette warning notes appropriately what is essentially a probabilistic linkage whereas the food warning abstracts from the probabilistic aspect. If a consumer’s reference point were the 1965 cigarette warning, he might believe that having a salad with mushrooms from the grocery store salad bar would be riskier than smoking two packs of high tar cigarettes.

The second warning that was imposed on cigarettes beginning in 1969 (see Table 5) is more comparable to the California food warning. In each case, the human hazard sign word “warning” is used; however, the California warning is in capital letters, whereas the cigarette warning only involves capitalization of the first letter and is consequently a milder form of warning. In addition, the cigarette warning that the product is “Dangerous To Your Health” is a milder form of warning than the California warning which states that the product will “cause cancer” due to the strong impact that the word “cancer” has in hazard warnings. Conse-

\(^{32}\) For early evidence of this type see the Gallup Poll Survey #449-K (Dec. 17, 1949) which found that fifty-two percent of respondents who smoke and sixty-six percent of nonsmoking respondents believed that “cigarette smoking is harmful.”

\(^{33}\) These reports have appeared on almost an annual basis since 1964.

\(^{34}\) For a review of policies see IPPOLITO, MORPHY & SANT, supra note 7.

\(^{35}\) One of the high estimates of the role of cigarette smoking as causing twenty-five to forty percent of all cancer deaths is that of R. DOLL & R. PETO, THE CAUSES OF CANCER (1981).
sequently, the food product warning is similar in spirit but nevertheless stronger than the cigarette warnings which were used from 1969-1983.

Only for some of the cigarette warnings that were instituted as part of the warning rotation strategy of 1984 is there a stronger warning given for cigarettes (see bottom of Table 5). In this case the human hazard signal word “warning” is in upper case letters for both the Proposition 65 and the cigarette warnings. The cigarette warning also includes information that the warning is from the Surgeon General which adds to its specificity but may not necessarily increase its authoritativeness any more than the indication that the food warning in California comes from “the State of California.” The first cigarette warning is closer in spirit to the California warning in terms of the causal linkage to disease. The main difference between the two warnings is that the cigarette warning includes a more diverse set of ailments that may arise and leads consumers to believe that cigarette smoking is more hazardous than foods bearing the California warning. The other three labels for cigarettes are less stringent in terms of the risk information being conveyed.

The third warning deals with reproductive risks; the California legislation addresses this risk with a reproductive toxicity warning that is distinct from the cancer warning. The fourth warning for cigarettes which states the product contains carbon monoxide may be of dubious relevance to consumers who do not know what the health implications of carbon monoxide are. The warning also appears to be clearly weaker than the food warning that has been proposed.

In the absence of field experiments, it is not possible to ascertain with great precision the number of cigarette warnings that would be viewed as being more severe than the food cancer risk warnings. However, in some cases it is apparent that the wording of the Proposition 65 food warning will be more stringent than some of the cigarette warnings that have been used. At the very least this warning puts food cancer risks in the same general class as cigarette risks.

Such indiscriminate labeling of products represents perhaps the worst case scenario under any hazard warning initiative. For a warning program to be credible it must provide accurate information to consumers regarding the risk. To have a risk communication effort that will have a very broad sweep in terms of picking up minor risks and then designating all these risks as being of substantial consequence, is likely to lead to a program that will either be dismissed by consumers as being nonsensical or taken seriously by consumers who will then overreact to the information that is given.

The ultimate policy result is that observers will note that warning ef-

forts are a failure, as indeed many observers have done in the literature on educational campaigns that have been designed to persuade people to alter their behavior.\(^{37}\) Labeling efforts of this type are a disservice to the right-to-know movement and may potentially undermine what could be a very effective and viable regulatory alternative.

The task of labeling cancer risks is in many respects akin to the problem a store has in grading eggs. If a store grades all eggs as being jumbo, irrespective of their size, then the grading system will be tantamount to having no grading system at all. Similarly, if all risks that consumers are exposed to are stamped as being consequential with no distinctions being made about the severity of the risk, then there will be little or no informational content to the warning program and it will have no beneficial effect on consumer choice.

VI. **Evidence Regarding the Message Conveyed by the Warning**

In addition to applying the lessons from the hazard warning literature to assess the implications of California’s approach, it is also possible to undertake a direct consumer test. I showed a group of consumers alternative warnings and obtained information regarding product riskiness implied by Proposition 65. This type of test is particularly useful in ascertaining whether the warning message distorts the true risk.

To obtain this assessment I distributed a questionnaire to ninety-nine adult participants in a Northwestern University continuing education program in the fall of 1987. The survey included three different tests of the informational content of Proposition 65—all of which indicate that the implied risk is excessive.

The first test involved a series of pairwise comparisons of labels that might appear on a product such as breakfast cereal. Respondents were asked to select the risk warning that conveyed the lower risk or to indicate a tie when appropriate. The Proposition 65 format that was used was the following:

**WARNING:** This product contains a chemical known to the state of Illinois to cause cancer.

Illinois was substituted for California in the wording because of the difference in the respondents’ state of residence, but otherwise the warning is the same as under Proposition 65.

The results of the three comparisons involving this Proposition 65 label are reported in Table 6. The first warning, which had wording that is

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identical to that used on products containing saccharin, was viewed as less risky than the Proposition 65 warning by 56% of the sample. Only 26% of the sample viewed the Proposition 65 warning as being less risky than the saccharin warning even though the 1 in 100,000 lifetime risk threshold for Proposition 65 warnings is about 40 times safer than the assessed lifetime risk of saccharin.38

The second warning comparison was made with a variant of the 1969 cigarette warning, with a statement by the Surgeon General being replaced by the State of Illinois. Even in this case, 36% of the sample viewed the cigarette warning as implying lower risk than the Proposition 65 warning, and 48% of the sample viewed the warning as implying a risk equal to that suggested by the Proposition 65 warning.

The third warning comparison was made with a warning that is identically equal to the 1965 cigarette warning. Because there was no change in wording, this warning may evoke general risk perceptions for cigarettes rather than attributes contained only in the warning. It appears that this warning was stronger than the 1969 variant (i.e., warning no. 2 in Table 6) for which there was some wording change. Sixty-nine percent of all consumers viewed the Proposition 65 warning as comparable to the 1964 cigarette warning, with the remainder being roughly evenly divided.

The overall implication of Table 6 is that consumers view the Proposition 65 warning as stronger than the saccharin warning and at least as strong or stronger than the early cigarette warnings.

After being given the Illinois variant of the Proposition 65 warning, consumers were asked to pick one of the three risk ranges shown in the first column of Table 7 and asked where the risk of the product fell within that range. About one-fifth of the consumers viewed the risk as below that of a can of saccharin cola, 44% viewed the risk as being between that of a can of saccharin cola and a pack of cigarettes, and 35% of the sample viewed the risk as being between that of one and five packs of cigarettes.

For the risk range each consumer selected, he indicated where within that interval the risk fell, using a ten point scale. These responses appear in the final column of Table 7; consumers tended to average around the midpoints of the intervals, except in the final case.

Even if we treat the risk perception of individuals in the first risk range as being essentially zero, on average consumers view a product bearing the Proposition 65 warning as posing the same risk as .58 packs of cigarettes.39 This risk level is much different than the risk threshold used for the California warning system.

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38 The saccharin cancer risk of 40/100,000 or 1/2500 appears as entry 100 at Travis, supra note 30, at 417.

39. Using the data in Table 6, we have the calculation: Risk = .44(.427) 1 pack of cigarettes + .35(.225) 5 packs of cigarettes = .582 packs of cigarettes.
A third test of the risk implied by the warning was a question that asked respondents how many of the 11,000,000 Illinois residents would develop cancer from daily, lifetime consumption of a product bearing the Illinois variant of the Proposition 65 warning. The average response was 1,316,729 deaths, or a lifetime risk of .12.

This risk assessment dwarfs the 1 in 100,000 risk threshold for warning. Moreover, in conjunction with the earlier results on cigarette equivalents, consumers viewed the lifetime risk of a daily pack of cigarettes as being .21.\textsuperscript{40} Even in the case of cigarettes, consumers overestimate the risk, which is consistent with psychological studies of risk perception.\textsuperscript{41}

Although all of the tests suggest that the Proposition 65 warning is excessive, predicting the actual consumer response is more complex. In response to a survey question regarding whether they would purchase a $2.59 box of cereal bearing such a warning, 34% said they would not do so at any price, and the remaining 61% wanted an average price discount of $1.60. These are substantial responses indeed for a warning intended to convey low risk of carcinogenicity.

After administering the survey, I discussed the likely range of coverage of Proposition 65 with the survey participants and the dominant response was twofold. First, if the products really are risky enough to warrant these labels, the government should have banned them. Second, if such labeling will affect a wide class of products, many will dismiss it as a ridiculous regulation.

The overall thrust of these results is that the content of the Proposition 65 approach greatly exaggerates the actual risks, creating the twin dangers of excessive alarm and possible dismissal of the warning program. The basic problem is that the Proposition 65 warning policy fails to inform consumers.

\section*{VII. Placement of the Warning}

Ideally, a warning should be provided in a manner that will provide information to consumers so that the warning can be integrated into their purchasing decisions. The prominence of the warning in terms of its physical display also will influence the level of risk associated with the product. A very prominent point-of-purchase display which boldly indicates the nature of the warning will have a more dramatic effect than a printed on-product warning that is not given a prominent place on the package. Similarly, a reference book at a supermarket which lists all of the potentially carcinogenic substances being sold at the market or an 800 number

\textsuperscript{40} This number is simply the perceived lifetime risk of .12 divided by the .58 cigarette pack equivalent.

\textsuperscript{41} \textsc{Viscusi \& Magat}, supra note 8, at 93-96.
that consumers can call would have a weaker impact than either the label or the point-of-purchase display.

In the case of the warning message, the placement objective should not be to have the strongest impact possible but to have an impact that is most commensurate with the risk level that is posed by the product. A more prominent warning program is more appropriate for severe risks than it is for trace risks of carcinogenic chemicals.

California has recommended the following manner of implementation. In the case of beer and wine, which some experts believe pose more substantial risks of cancer than the typical food product, stores will be able to achieve compliance through a general point-of-purchase display that will be apparent to consumers at the point of sale or at the point of product display. A liquor store must post a single warning sign upon entry rather than post individual product displays.

Once again, the emphasis of the California regulation is misplaced since there are more meticulous requirements on each individual product that may pose a small cancer risk than those posed by beer and wine products. In the case of food products, one can provide the warning using the following methods, either individually or in combination: i) a product label; ii) identification of the product through shelf labeling, signs, menus, or a combination thereof; or iii) any system of signs, public ads, toll-free numbers, or any other system that provides a clear and reasonable warning. Thus, the warnings must be product-specific and, with the possible exception of the last mode of regulatory compliance, more compelling than the liquor warnings in terms of their prominence. The basic problem is not that the beer and wine warning is too lenient. Indeed, it too may be excessive. Rather, the difficulty is that California's overall warning system makes no attempt to differentiate different degrees of risk and their treatment.

The most traditional form of product warning is the application of on-product labels. If these labels are to be of assistance to consumers in making their purchase decisions they should be prominently displayed on the package, presumably on the front of the box or in some other location likely to be examined by the shopper.

Having an on-product label simply serves to reinforce the image created by the wording of the warning. In particular, use of an on-product label reinforces the consumer's belief that the product poses a greater risk than saccharin and harbors a risk comparable to that of cigarette smoking. This

45. Id. art. 6, § 12601(b)(1)(A)-(C), to be codified at Cal. Admin. Code tit. 22, § 12601(b)(1)(A)-(C).
is clearly unreasonable given the minimal risk threshold that has been established for the warning requirement.

The importance of having an on-product label is reflected in a series of informal tests that I undertook. In presenting the worker warning results in Table 3 at seminars ranging from a Harvard Law School class to a faculty seminar at the National Bureau of Economic Research, I have polled the audience on their perceptions of riskiness in working with a substance bearing the sodium bicarbonate label and its associated instructions (keep in a dry place, sweep up spills, etc.). The majority of the respondents regarded working with this substance as an above-average risk job in the chemical industry. When I called their attention to the fact that sodium bicarbonate is simply household baking soda, their defense to their overreaction was that the product shouldn't have had a formal label if it wasn't risky. The very fact that a product bears a label has strong informational content.

Firms also face an important practical problem of complying with statespecific regulations in terms of labeling nationally-marketed products. Quite simply, it will be very expensive in terms of the product's distribution to manufacture it with state-specific hazard warning labels. For example, frozen pizzas may be marketed in both California and Nevada, and it may be very costly to have separate packaging operations for products that are targeted for a particular state. As the warning efforts proliferate in different states and different warning requirements are imposed, compliance costs will increase with the most substantial burdens being placed on large firms that market on a national basis. These concerns suggest that warning options other than on-product labels will be far less costly as these labeling policies proliferate.

The second policy option of in-store displays and shelf labeling creates potential burdens for grocery operators, interferes with effective marketing of products, and clutter the appearance of a store. From a consumer information standpoint, such an approach could be effective if the number of hazardous products were small.

A final regulatory option is to adopt a combination of ads and a toll-free 800 number that consumers can call to obtain product risk information. This option imposes fewer disruption costs on firms since the marketing of products and their production need not be altered. The more restrained nature of this mode of intervention also is in keeping with the low level of risks involved. To ensure compliance with the legal guidelines, however, this effort must be "clear and reasonable" and be designed "to make the warning message available to the individual prior to exposure."\footnote{Id. art. 6, § 12601(a), to be codified at Cal. Admin. Code tit. 22, § 12601(a).} Unlike the other available modes of compliance an adequate
warning system of this type is less clearly defined by the regulation, thus increasing the likelihood of a court challenge.

A final alternative that is not specified by California as representing a means for attaining compliance is the use of a reference book at the store. This option is not, however, ruled out by the regulations since firms can adopt "any other system that provides clear and reasonable warnings."47 Consumers could be notified when entering a store that sells products that pose risks of cancer by referring to this book for a list. This type of approach decreases the prominence with which the warning is given. In addition, the listing of products that do pose risks probably will be published by consumer groups such as the Consumers Union. The list will be widely accessible and the subject of substantial media coverage.

The use of such reference materials is not unprecedented. In particular, the principal analogue is material safety data sheets which are used to achieve compliance with the Occupational Safety & Health Administration (OSHA) hazard communication standards.48 Such warnings are used in the case of workplace risks which may be many times larger than even the most severe risks encountered in a food store.

VIII. CAN WE DO BETTER?

Although hopefully the labeling provisions of Proposition 65 will not be replicated in a national labeling system, it seems likely that there will ultimately be some type of federal regulation. If California's approach is not the ideal solution, how can it be improved?

The general idea of labeling cancer risks in products is appealing since it provides useful information particularly for consumers who are likely to have serious concerns about a product's risk attributes. There is clearly a potential role for an effective food cancer warning system if it could be devised. This warning system should have the following types of components. First, the underlying scientific basis for the regulation should be determined on the basis of unbiased assessments of the risk. Risk assessments should not be distorted in an effort to be "conservative." Rather, it should operate on the basis of true risk relationships and if individuals wish to be conservative in their consumption decisions or if the adoption of conservative regulatory policies is desired it can be done. However, distorting the scientific basis that is used to decide what actions should be taken prevents society from making a sound response to the actual risks that may be present.

Second, when the risks are labeled they should be treated with a differentiated risk warning system rather than a single warning system. Risk

47. Id. art. 6, § 12601(b)(1)(C), to be codified at Cal. Admin. Code tit. 22, § 12601(b)(1)(C).
levels that are present in food are simply too diverse to be captured with a single food cancer warning. To do so lumps products that pose many thousands of times lower risks than other products in the same category, and provides too simplistic a ranking scheme.

A minimal starting point for such differentiation would be to have a two-tiered warning system in which the relatively low levels of risk would be in the first tier and higher levels of risk would be treated in a second tier of warnings. Under this approach the risk threshold could be set at a lifetime cancer risk level such as 1 chance in 100,000 which is the risk level that should affect purchase decisions. For products meeting this minimal risk threshold, consumers could be apprised of the nature of the risk through an unobtrusive labeling system that indicated the low level of the risk involved. Consumers could consult a reference binder at stores that would not be unlike the material safety data sheets used under OSHA hazard communication regulations. The warning content could be adapted to indicate a low level of cancer risk, and the mode of communication could also be adopted to indicate what would be appropriate to a low level of risk, thus avoiding the problem of stigmatizing low-risk products with on-product labels that by their very nature imply a higher risk level.

The second tier of the warning system would consist of a more visible warning such as on-product labeling or a point-of-purchase display. The warning for this class of products could be ascertained after a better assessment of the distribution of risks across food products was obtained. As in the case of grading eggs, we cannot decide which eggs should be classified as jumbo or which eggs should be classified as extra large until a more precise assessment of the distribution of the different sizes of eggs in the population is obtained. For the same reason, more information needs to be known about the different risk levels before the truly substantial risks can be selected. Somewhat surprisingly, California has proposed a warning system before ascertaining the level and distribution of risks that are present.

The exact content of the warning that should be used either for the low level or high level risks cannot be determined in the abstract. Enough is known about labels and their effects to be able to make some overall judgments regarding gross distortions in the warning message such as those embodied in the California warning system. However, to make more refined judgments, it is necessary to ascertain more precisely what effect the labeling system will have on consumers. Pretests should be done to determine the effect of labels on consumer groups in much the same manner as has been done in the labeling experiments I have undertaken for the U.S. Environmental Protection Agency. For any government agency to mandate a particular warning would be irresponsible from a policy standpoint.

49. Viscusi & Magat, supra note 8.
since it would be playing pot luck with the likely responses that consumers could have. In this area in particular policymakers should take advantage of the opportunities to refine their knowledge of the likely effects of what is surely a truly major food risk policy.

IX. Conclusion

Although Proposition 65 does not establish a sound basis for food risk labeling policies, it does highlight the inevitability of a national food risk warning program. Examination of the warning requirements of Proposition 65 in comparison with other warning labels and the knowledge of how people respond to warning programs suggests that this effort is unduly alarmist and will not achieve its objective of informing consumers. Perhaps the best case outcome possible is that consumers will disregard the labeling effort altogether as being irresponsible and without informational content.

Ideally, informational policies such as a food cancer warning effort could play an instructive role in informing consumers and enabling them to make better decisions. If nothing else, Proposition 65 has put this particular type of policy at the top of the food safety agenda. Hopefully, any national policy that emerges from this initiative will be on a sounder basis than this initial effort.
APPENDIX

Table 1*

Effects of Bleach Labels on Precaution-Taking (percentages)

<table>
<thead>
<tr>
<th>Precaution</th>
<th>No warning (n = 51)</th>
<th>Clorox (n = 59)</th>
<th>Bright (n = 42)</th>
<th>Text (n = 44)</th>
<th>Maximum incremental effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do not mix with toilet bowl cleaner (if toilet is badly stained)</td>
<td>16</td>
<td>23</td>
<td>36</td>
<td>40</td>
<td>24</td>
</tr>
<tr>
<td>2. Do not add to ammonia-based cleaners (for particularly dirty jobs)</td>
<td>69</td>
<td>68</td>
<td>69</td>
<td>84</td>
<td>16</td>
</tr>
<tr>
<td>3. Store in childproof location</td>
<td>43</td>
<td>63</td>
<td>50</td>
<td>76</td>
<td>33</td>
</tr>
</tbody>
</table>


Table 2*

Effects of Drain Opener Labels on Precaution-Taking (percentages)

<table>
<thead>
<tr>
<th>Precaution</th>
<th>No warning (n = 59)</th>
<th>Drano (n = 59)</th>
<th>Test (n = 50)</th>
<th>Maximum incremental effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Wear rubber gloves</td>
<td>63</td>
<td>82</td>
<td>73</td>
<td>19</td>
</tr>
<tr>
<td>2. Store in childproof location</td>
<td>54</td>
<td>68</td>
<td>66</td>
<td>12</td>
</tr>
</tbody>
</table>

### Table 3*
Worker Responses to Hazard Warnings

<table>
<thead>
<tr>
<th></th>
<th>Sodium Bicarbonate (n = 31)</th>
<th>Chloroacetophenone (n = 106)</th>
<th>Asbestos (n = 102)</th>
<th>TNT (n = 96)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Risk</td>
<td>.12</td>
<td>.10</td>
<td>.09</td>
<td>.10</td>
</tr>
<tr>
<td>Risk after Receiving Warning</td>
<td>.06</td>
<td>.18</td>
<td>.26</td>
<td>.31</td>
</tr>
<tr>
<td>Annual Risk Premium Required ($1982)*</td>
<td>0</td>
<td>1,919.01</td>
<td>2,995.59</td>
<td>5,158.31</td>
</tr>
<tr>
<td>Would Not stay on Job at Any Wage</td>
<td>.00</td>
<td>.02</td>
<td>.11</td>
<td>.17</td>
</tr>
<tr>
<td>Intend to Quit if No Wage Increase</td>
<td>.00</td>
<td>.23</td>
<td>.65</td>
<td>.73</td>
</tr>
<tr>
<td>Would Take the Job Again If No Wage Increase</td>
<td>.90</td>
<td>.58</td>
<td>.11</td>
<td>.07</td>
</tr>
</tbody>
</table>


a. The risk premium figures are conditional upon facing an increased risk and being willing to accept a finite risk premium.

### Table 4*
Consumers’ Price Response to Changes in Risk by One Injury per Two Million Householdsa

<table>
<thead>
<tr>
<th>Injury type</th>
<th>Price Effectb (Std. error)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleach</td>
<td></td>
</tr>
<tr>
<td>Chloramine gas</td>
<td>0.15 (0.02)</td>
</tr>
<tr>
<td>Child poisoning</td>
<td>0.21 (0.03)</td>
</tr>
<tr>
<td>Drain opener</td>
<td></td>
</tr>
<tr>
<td>Hand burns</td>
<td>0.06 (0.01)</td>
</tr>
<tr>
<td>Child poisoning</td>
<td>0.18 (0.02)</td>
</tr>
</tbody>
</table>


a. Injury valuations are measured in dollars per injury avoided in every 2 million households.

b. The highest five and lowest five injury valuations were excluded before calculation of the mean values.
<table>
<thead>
<tr>
<th>Product Warning Group</th>
<th>Warning Content</th>
<th>Warning Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition 65 — Food</td>
<td>“WARNING: This product contains a chemical known to the state of California to cause cancer.”&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Proposition 65 - Restaurants</td>
<td>“WARNING: Chemicals known to the state of California to cause cancer or birth defects or other reproductive harm may be present in foods or beverages sold or served here.”&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Proposition 65 — Occupational or Environmental</td>
<td>“WARNING: This area contains a chemical known to the state of California to cause cancer.”&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Saccharin</td>
<td>“USE OF THIS PRODUCT MAY BE HAZARDOUS TO YOUR HEALTH. THIS PRODUCT CONTAINS SACCHARIN WHICH HAS BEEN DETERMINED TO CAUSE CANCER IN LABORATORY ANIMALS.”&lt;sup&gt;d&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Cigarette Warning, 1965</td>
<td>“Caution: Cigarette Smoking May be Hazardous to Your Health.”&lt;sup&gt;e&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Cigarette Warning, 1969</td>
<td>“Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous To Your Health.”&lt;sup&gt;f&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Cigarette Warning, 1984</td>
<td>1) “SURGEON GENERAL’S WARNING: Smoking Causes Lung Cancer, Heart Disease, Emphysema, and May Complicate Pregnancy.”&lt;sup&gt;g&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) “SURGEON GENERAL’S WARNING: Quitting Smoking Now Greatly Reduces Serious Risks to Your Health.”&lt;sup&gt;h&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3) “SURGEON GENERAL’S WARNING: Smoking by Pregnant Women May Result in Fetal Injury, Premature Birth, and Low Birth Weight.”&lt;sup&gt;i&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4) “SURGEON GENERAL’S WARNING: Cigarette Smoke Contains Carbon Monoxide.”&lt;sup&gt;j&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

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<sup>a</sup> Emergency Regulations, art. 6, § 12601(b)(4)(A), to be codified at Cal. Admin. Code tit. 22, § 12601(b)(4)(A).  
<sup>b</sup> Id. art. 6, § 12601(b)(4)(C), to be codified at Cal. Admin. Code tit. 22, § 12601(b)(4)(C).  
<sup>c</sup> Id. art. 6, § 12601(c)(3)(A), to be codified at Cal. Admin. Code tit. 22, § 12601(c)(3)(A).  
<sup>d</sup> Saccharin Study and Labeling Act (Nov. 1977).  
<sup>f</sup> Id.  
<sup>g</sup> Id.  
<sup>h</sup> Id.  
<sup>i</sup> Id.  
<sup>j</sup> Id.
Table 6
Comparison of California Warning with other Wordings

<table>
<thead>
<tr>
<th>Hazard Warning</th>
<th>Fraction Who Regard as Less Risky</th>
<th>Fraction Who Regard as More Risky</th>
<th>Fraction Who Regard as Equally Risky</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use of this product may be hazardous to your health. This product contains a chemical that has been determined to cause cancer in laboratory animals.</td>
<td>.56</td>
<td>.26</td>
<td>.18</td>
</tr>
<tr>
<td>2. Warning: The state of Illinois has determined that this product is dangerous to your health.</td>
<td>.36</td>
<td>.16</td>
<td>.48</td>
</tr>
<tr>
<td>3. Caution: Use of this product may be hazardous to your health.</td>
<td>.14</td>
<td>.17</td>
<td>.69</td>
</tr>
</tbody>
</table>

Table 7
Risk Assessment for Proposition 65 Warning

<table>
<thead>
<tr>
<th>Risk Range</th>
<th>Fraction Who Put Product in Range</th>
<th>Score within Range on a 10 pt. Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Zero Risk — 1 12 oz. Saccharin Cola</td>
<td>.21</td>
<td>4.86</td>
</tr>
<tr>
<td>2. 1 Saccharin Cola — 1 Pack of Cigarettes</td>
<td>.44</td>
<td>4.27</td>
</tr>
<tr>
<td>3. 1 Pack of Cigarettes — 5 Packs of Cigarettes</td>
<td>.35</td>
<td>2.25</td>
</tr>
</tbody>
</table>