Safety of ingredients used in cosmetics

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The Cosmetic Ingredient Review (CIR) program was established in 1976 by the Cosmetics, Toiletry, and Fragrance Association, with the support of the Food and Drug Administration (FDA) and the Consumer Federation of America (CFA). CIR performs independent, expert reviews to determine if ingredients used in cosmetics are safe. CIR staff prepares summaries of available data and the CIR Expert Panel reviews the data in open, public meetings. If more data are needed, requests are made. Unpublished studies may be provided, but become public and available for review once summarized in CIR safety assessments. Tentative conclusions are supported with a rationale and public comment is sought. Taking any input into consideration, a final safety assessment monograph is issued. These monographs are submitted for publication in the peer-reviewed *International Journal of Toxicology*. To date, 1194 individual cosmetic ingredients have been addressed. Of these, 683 were found to be safe in cosmetics in the present practices of use and concentration. With qualifications, another 388 have been found safe for use in cosmetics; specific qualifications for each are given. Nine ingredients have been deemed unsafe for use in cosmetics and the safety issue has been described. The available data were found insufficient to support the safety of 114 ingredients; the needed data are listed. Hair dyes represent an important product category reviewed by CIR. In considering hair dyes, the CIR Expert Panel reviews experimental and clinical data specific to the particular chemical structure of each hair dye and reviews epidemiologic studies that address hair dye use that are less specific. Recently the CIR Expert Panel concluded that the available epidemiologic studies are insufficient to conclude there is a causal relationship between hair dye use and cancer and other end points. It is inevitable that new information will become available concerning ingredients for which safety assessments were completed in the early days of the program. To consider new data, the CIR Expert Panel has instituted a re-review program. Sodium lauryl sulfate (SLS), formaldehyde, and parabens are discussed as examples. Safety assessments currently underway are listed, along with high-priority ingredients from which new work will be chosen. Although supported by the cosmetics industry, the CIR program has remained independent in its decision making, based on its open, public process; the integrity of the expert panel members; the participation of the FDA and the CFA; and the cooperation of the cosmetics industry. (J Am Acad Dermatol 2005;52:125-32.)

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In the early 1970s, the US Congress considered legislation to amend the Federal Food, Drug and Cosmetic Act to require premarket safety testing of cosmetic products, much as is done for drugs. This piece of legislation was not enacted, but other approaches to regulate cosmetics were developed. With the support of the industry, the Food and Drug Administration (FDA) promulgated cosmetic product ingredient labeling regulations in 1975 that would ensure the consumer's right to know about product safety. This regulation placed the burden on manufacturers to gather information supporting the safety of ingredients used in their products. Alternatively, a company could place a warning on the product alerting the consumer that the safety had not been assured. FDA, however, lacked the resources to inspect facilities and review safety data mandated in these regulations.

The Cosmetic, Toiletry, and Fragrance Association (CTFA) advocated development and support of a voluntary, self-regulatory review program that would evaluate safety of ingredients used in cosmetics. With the Consumer Federation of America (CFA), the FDA supported this plan for a privately sponsored program to evaluate the safety of cosmetic ingredients. In 1976, the Cosmetic Ingredient Review (CIR) program was born, with its key elements of expertise, independence, and openness.

This article updates earlier reviews in the medical and scientific literature[1-5] addressing the CIR program—its mission, accomplishments, and future.

THE CIR PROGRAM

The CIR mission statement calls for the thorough review and assessment of the safety of ingredients used in cosmetics in an open, unbiased, and expert manner—with results published in the peer-reviewed scientific literature. CIR operates within a set of procedures written by former FDA General Counsel, Peter Barton Hutt, and patterned after the FDA process for scientific review of over-the-counter drugs.

A 5-member CIR Steering Committee is chaired by the CTFA President, currently E. Edward Kavanaugh. William Jordan is the long-time member of the CIR Steering Committee appointed by the American Academy of Dermatology (AAD). Joseph Borzelleca is the member representing the Society of Toxicology. The other two members include the chairman of CTFA's Scientific Advisory Committee, currently Janice Teal, and CTFA's Vice President for Science, currently Gerald N. McEwen, Jr. The steering committee provides general oversight, but has no role in selecting which ingredients will be reviewed or in the decision-making process once a review is initiated. The CIR Steering Committee does appoint individuals to serve on the CIR Expert Panel after an open nominations process.

Nominations of individuals to serve on the CIR Expert Panel are sought from consumer, scientific, and medical groups (including the AAD); government agencies; and industry. The panel includes 7 individuals with expertise in the medical and scientific disciplines necessary to review safety test data. Expert panel members must meet the same conflict-of-interest requirements as outside experts to FDA.

In addition to the panel members, 3 liaison members also serve—one each from the CFA, the FDA, and the cosmetics industry. These liaison members serve as a conduit to assure that the views of each constituency may be brought directly to the table.

Karl Beyer, the first panel chairman, best captured the essence of the CIR Expert Panel when he said, "...at its inception, the term 'expert panel' related to the technical competence of its membership—time and common cause have invested the group with a quality quite beyond their individual capabilities."

The members of the first CIR Expert Panel are listed in Table I, along with the current members.

Although supported by the cosmetics industry, the CIR program has remained independent in its decision making, thanks to the open, public process; the integrity of the expert panel members; the participation of the FDA and the CFA; and the cooperation of the cosmetics industry.

SELECTING INGREDIENTS FOR REVIEW

Cosmetic ingredients are catalogued in the International Cosmetic Ingredient Dictionary and Handbook.[6] From this list of more than 10,000 individual chemicals that were once used or are currently used (or are merely a supplier's hope for future use), CIR selects ingredients for its review.

Some ingredients are excluded from review by the CIR procedures.[7] Fragrance ingredients are reviewed by the Research Institute for Fragrance Materials (RIFM) and the International Fragrance Association; with so many reviews to do, duplication of this effort by CIR is unnecessary. Ingredients specifically regulated by FDA, such as color additives, are also excluded. Ingredients may be deferred from review if they are being reviewed by FDA under the over-the-counter drug review process. When FDA's review is completed, the CIR Expert Panel may conclude that the FDA review was adequate to address the safety of the ingredient in cosmetics, or undertake its own safety assessment.

Priorities for the remaining thousands of ingredients are established by the CIR Expert Panel, predicated on the frequency of use in cosmetics and on the potential biologic activity. Use information is provided by FDA from their voluntary reporting system that captures data provided by industry giving the ingredient and the type of product in which the ingredient is used.

Potential biologic activity has been estimated from the summary of effects given in the Registry of Toxic Effects of Chemical Substances (RTECS) previously maintained (through December 2001) by the National Institute for Occupational Safety and Health.[8] If no information is available from that source, CIR uses the TopKat structure-activity analysis software (Accelrys, San Diego, Calif) that predicts biologic activity using key structural elements that have been validated as indicators of toxicologic end points such as carcinogenesis. Priority scores

Table I. Members of the Cosmetic Ingredient Review Expert Panel

First CIR Expert Panel	Current CIR Expert Panel
Chair, Karl Beyer Jr, MD, PhD, ScD	Chair, Wilma F. Bergfeld, MD, FACP
Penn State College of Medicine and the Hershey Medical Center	Cleveland Clinic Foundation
Wilma F. Bergfeld, MD, FACP	Donald V. Belsito, MD
Cleveland Clinic Foundation	University of Kansas Medical Center
Julius Coon, PhD	Curtis D. Klaassen, PhD
Jefferson Medical College	University of Kansas Medical Center
Robert M. Fine, MD	James G. Marks Jr, MD
Emory University School of Medicine	Penn State College of Medicine and the Hershey Medical Center
Dietrich Hoffman, PhD	Ronald C. Shank, PhD
Naylor Dana Institute for Disease Prevention	University of California—Irvine
William Montagna, PhD	Thomas J. Slaga, PhD
Oregon Regional Primate Research Center	AMC Cancer Research Center
Robert Roudebush, PhD	Paul W. Snyder, DVM, PhD
University of Rochester School of Medicine	Purdue University
Martin Greif, FDA liaison	Linda Katz, MD, MPH, FDA liaison
James McNerney, Industry liaison	Gerald N. McEwen, PhD, JD, Industry liaison
Cathy Sulzberger, Consumer Federation of America liaison	Rachel Weintraub, Esq., Consumer Federation of America liaison

may be increased for ingredients that easily penetrate the skin or are found in products used on specific populations (eg, infants).

Appearance on the high-priority list is not an indication that a cosmetic ingredient is unsafe. Software predictions must be supported by actual studies and RTECS information must be viewed in the context of exposure levels. The priority list, however, is an excellent tool for determining what ingredients the CIR Expert Panel should review first.

The priority list is considered regularly by the CIR Expert Panel, which may modify, add, or delete ingredients from the high-priority list. For example, because it is used in most cosmetic products, water always scores high in the prioritization process, but the CIR Expert Panel has declined to include this ingredient on the high-priority list.

RESPONSES TO CURRENT NEEDS

Acting on a request from the CTFA in 1994, the CIR Expert Panel included alpha hydroxy acids in its high-priority group of ingredients and began its safety assessment. Both the FDA and CFA supported this decision. Extensive unpublished data were provided by the industry, FDA's own research laboratories also provided their study results, and the views of researchers active in the field were solicited.

The CIR Expert Panel concluded in 1997 that alpha hydroxy acids are safe for use in cosmetic products at concentrations $\leq$10%, at final formulation pH $\geq$3.5, when formulated to avoid increasing sun sensitivity or when directions for use include the daily use of sun protection. These ingredients are safe for use in salon products at concentrations $\leq$30%, at final formulation pH $\geq$3.0, in products designed for brief, discontinuous use followed by thorough rinsing from the skin, when applied by trained professionals, and when application is accompanied by directions for the daily use of sun protection. The CIR safety assessment does not address the medical use of alpha hydroxy acids.[9]

More recently, based on FDA and other concerns about the safety of *Piper methysticum* (Kava Kava) extracts,[10] an infrequently used botanic cosmetic ingredient, the CIR Expert Panel placed this ingredient on its high-priority list. A review is underway.

THE CIR PROCESS

CIR's staff of scientific writers is responsible for the conduct of extensive literature searches online, retrieval of full citations, and compilation of the data. These individuals gather the data and prepare it for review, but do not perform an evaluation—evaluation is the purview of the CIR Expert Panel.

All interested parties may participate by providing information in addition to that summarized by the staff. Industry, in particular, supports the CIR program in a very tangible way by providing unpublished data from safety testing they have done. These studies become public as part of the process, are summarized in the review, and are available for review by any interested party.

Table II. Distribution of conclusions in Cosmetic Ingredient Review safety assessments through September 2004

Conclusion	No. of ingredients	Distribution
Safe as used	683	57.2%
Safe with qualifications	388	32.5%
Unsafe	114	9.5%
Insufficient data	9	0.8%

If the open scientific literature and the unpublished data provided by industry still contain insufficient information on which to base a safety assessment, the expert panel will call on industry or other interested parties to undertake specific studies or to provide previously unpublished data. At completion of a development process that includes multiple opportunities for public comment and open, public discussion of the monograph by the expert panel, a tentative safety assessment that includes the panel's rationale for its decision is issued for even further public comment. The expert panel considers the input received at this stage and issues a final safety assessment.

A new assignment is given to the CIR staff person—the next item on the high-priority list—and the process begins anew.

CIR safety assessment monographs are available from CIR. All unpublished safety test data reviewed by the CIR Expert Panel are publicly available from CIR. As an additional step to ensure broad distribution of its findings, CIR submits its safety assessments for publication in peer-reviewed special issues of the *International Journal of Toxicology*. In addition, CIR safety assessments have been included in a FolioView database that CTFA maintains and is made available online to members of the American Contact Dermatitis Society.

Information about CIR, meetings of the CIR Expert Panel, and recent ingredient safety assessment conclusions are available on CIR's home page at URL: http://www.cir-safety.org. Questions may be sent to cirinfo@cir-safety.org.

CIR EXPERT PANEL FINDINGS

From 1976 to September 2004, the CIR Expert Panel completed safety assessments of 1194 ingredients. These ingredients are estimated to be used in more than 100,000 cosmetic products. The distribution of conclusions into the categories of safe as used, safe with qualifications, unsafe, and insufficient data are given in Table II.

For 683 ingredients (approximately 58%), the conclusion was safe as used. In this context, "as used" refers to the practices of use and concentrations described in each safety assessment. The ingredients in this category are listed, along with the maximum concentration of use, at URL:http://www.cir-safety.org/findings.shtml.

For 388 ingredients (approximately 33%) the conclusion was that they could be used safely in cosmetic products with qualifications. Ingredients found safe with qualifications fall into one or more of the following groups: concentration limits, inhalation or other product-use restrictions, and nitrosamine formation. Ingredients may be listed more than once if there are multiple qualifications on their safe use. The ingredients in this category are listed, along with a description of the restriction to assure safe use, at URL:http://www.cir-safety.org/findings.shtml.

For 114 ingredients (approximately 9%), the available data were insufficient to support safety. If the panel reaches an insufficient data conclusion, it does not state whether the ingredient is safe or unsafe. The panel is, however, describing a situation in which the available data do not support safety. The ingredients in this category and a brief, qualitative description of the magnitude of the data still needed are listed at URL:http://www.cir-safety.org/findings.shtml.

Only 9 ingredients were found to be unsafe for use in cosmetic products (<1%). These are ingredients with specific adverse effects that make them unsuitable for use in cosmetics, in the view of the panel. Those ingredients and the safety concern identified by the panel are listed at URL:http://www.cir-safety.org/findings.shtml.

As new conclusions are reached, these World Wide Web pages will be updated to represent the most current information available.

HAIR DYES

Prominent among the ingredients reviewed by the CIR Expert Panel have been hair dyes. Three phenylenediamine hair dyes and HC blue No. 1 have been found to be carcinogenic in animal tests and have been deemed unsafe for use in cosmetics. An additional 63 hair dye ingredients have been reviewed by the CIR Expert Panel. All hair dye conclusions are available at URL:http://www.cir-safety.org/findings.shtml.

The CIR Expert Panel recognizes that many hair dyes contain ingredients that may be cause irritation, allergic response, or both in certain individuals. Hair dye products routinely carry product labeling that addresses these concerns (Caution—this product contains ingredients which may cause skin irritation on certain individuals and a preliminary test according to accompanying directions should be made. This

product must not be used for dyeing the eyelashes or eyebrows; to do so may cause blindness).

The CIR Expert Panel has further advised the cosmetics industry that the evaluation of the open patch test should be performed 48 hours after application of the test material. If consumers follow these label instructions, the CIR Expert Panel considers that the risk of significant skin irritation or sensitization or ocular damage is minimal.

The primary focus of each of the hair dye safety assessments is the available safety test data on the individual chemicals. These data contrast with epidemiology studies, which do not provide specific findings on particular hair dye ingredients, but do provide a sense of health risks that may be associated with the use of hair dyes in general or with certain broad classes of color. These data also have been considered.

In 1993, an International Agency for Research on Cancer (IARC) working group evaluated 78 epidemiologic literature citations and concluded that personal use of hair colorants cannot be evaluated as to its carcinogenicity and that occupation as a hairdresser or barber entails exposures that are probably carcinogenic.[11] The IARC report did not distinguish between personal use of oxidative/permanent versus direct hair dyes, or distinguish among the multiple chemical exposures in addition to hair dyes to which a hairdresser or barber might be exposed.

In 2003, an updated review of the available epidemiologic literature was prepared by a group at the Johns Hopkins University, Baltimore, Mass.[12] This review considered 83 literature citations available since the IARC review. The authors found that hair dye exposure assessment ranged from ever/never use to information on type, color, duration, and frequency of use. This review stated that associations between personal hair dye use and development of bladder cancer, non-Hodgkin's lymphoma, and multiple myeloma have been observed in at least one of these newer studies that were well designed with an exposure assessment that included hair dye type, color, and frequency or duration of use. Statistically significant associations were primarily seen with permanent hair dyes. The authors stated, however, that these findings were not consistently observed across studies and concluded that the available evidence is insufficient to conclude a causal association between personal hair dye use and bladder cancer, non-Hodgkin's lymphoma, and multiple myeloma. With respect to other cancers, including leukemia, breast cancer, or childhood cancers, and autoimmune disease or adverse developmental/reproductive effects, they concluded that the evidence also did not demonstrate a causal association with personal hair dye use.

This review also cited results of a case-control study[13,14] that suggested the possibility that genetically susceptible subgroups that detoxify arylamines to a lower degree than the general population may be at greater risk of bladder cancer from hair dye exposures.

In 2004, two case-control studies were reported on the same 601 women with non-Hodgkin's lymphoma compared with 717 population-based control subjects.[15,16] One study[15] found an increased risk of non-Hodgkin's lymphoma among women who reported use of hair dye products before 1980, but not among women who reported use of hair dye products after 1980. The other study[16] reported an increased risk of non-Hodgkin's lymphoma associated with animal protein and saturated fat intake, but a reduced risk associated with unsaturated fat intake.

The CIR Expert Panel concluded that the available epidemiologic studies were insufficient to conclude there is a causal relationship between personal hair dye use and cancer and other end points. The panel stated that replication of the studies that found associations between personal use of permanent hair dyes and bladder cancer, non-Hodgkin's lymphoma, and multiple myeloma is needed to better understand these observations.

RE-REVIEW

It is inevitable that new information will become available concerning ingredients for which safety assessments were completed in the early days of the program. To ensure that no new data are overlooked, the CIR Expert Panel has instituted a re-review program.

Staff members conduct a new online search and summarize the findings for consideration by the CIR Expert Panel. If a safety assessment is reopened, a new scientific literature review will be prepared combining the old and new data and made available for public comment. From there the process proceeds as if a new review was being done.

If the expert panel decides that the safety assessment does not need to be reopened, this decision is included in the announcement of the panel's findings and any interested party is invited to comment. If, after considering any comment, the panel concludes there is no need to reopen a safety assessment, then a summary of the panel's deliberations is prepared. This summary includes consideration of new safety data, information on current uses and concentrations of use, and a reference list. So that the scientific community is aware of these findings, an annual summary of the expert panel's re-review

findings is prepared and published in the *International Journal of Toxicology*.

Notable examples of recent re-review efforts include SLS, formaldehyde, and parabens preservatives.

In 2002, the CIR Expert Panel debunked a popular Internet scare—the SLS cancer risk. The CIR Expert Panel considered more than 250 scientific research studies that had been conducted since the original safety assessment was published in 1983. These studies confirmed the irritant properties of SLS and reinforced the limitation on concentration established by the panel. None of those studies, however, suggested any possibility that SLS causes or could cause cancer. In fact, several studies concluded that SLS was not carcinogenic. Therefore, the safety assessment was not reopened and, more importantly, another Internet rumor squashed.

In 2003, the panel considered several hundred new studies of formaldehyde. These studies provided additional documentation that this chemical is toxic at high doses, but also confirmed the absence of toxicity at low doses. The panel found that these new data merely confirmed that this cosmetic preservative can be used safely if its concentration is limited—the safety assessment was not reopened.

Also in 2003, the panel considered the large number of studies of the popular cosmetic preservatives collectively known as parabens. The earlier safety assessment was completed in 1984. Most of the new data relate to safety issues addressed in the original safety assessment (eg, sensitization). By themselves these data would not cause the panel to reopen, but an entirely new body of work, however, identified parabens as endocrine disrupters, reproductive toxicants, or both. Accordingly, the expert panel elected to begin the process to reopen this safety assessment. That process is ongoing.

HIGH-PRIORITY LIST

New safety assessments will be initiated from the following high-priority list:

1. Pentasodium pentetate
2. Sodium hyaluronate and hyaluronic acid
3. 3-Methylamino-4-nitrophenoxyethanol
4. Dimethyl ether
5. Hydrochlorofluorocarbon 22 and 142B; hydrofluorocarbon 134A, 152A, and 227ea
6. DM hydantoin
7. Hydrogenated polyisobutene and polyisobutane
8. PEG-7, -9, -10, -12, -14, -16, -18, -20, -40, -45, -55, -60, -90, -100, -135, -180, -200, -220, -240, -350, -400, -500, and -800
9. PPG-2 methyl ether and PPG-2 methyl ether acetate
10. Allantoin

10a. Allantoin polygalacturonic acid group

11. Arginine aspartate
12. Laurylpyridinium chloride
13. Benzyl benzoate
14. Glyoxylic acid
15. Fumaric acid
16. Maltitol
17. Silica and hydrated silica
18. Talc
19. Polymethylmethacrylate
20. Cetyl acetate

SAFETY ASSESSMENTS CURRENTLY UNDER DEVELOPMENT

The safety assessment of the following cosmetic ingredients or ingredient groups are currently underway.

1. Alcohol denat. including SD alcohol 3-A, 30, 39, 39-B, 39-C, 40, 40-B, and 40-C

2a. Ammonium glycyrrhizate, dipotassium glycyrrhizate, disodium glycyrrhizate, disodium succinoyl glycyrrhetinate, glyceryl glycyrrhetinate, glycyrrhetinic acid, glycyrrhetinyl stearate, glycyrrhizic acid, methyl glycyrrhizate, potassium glycyrrhetinate, potassium glycyrrhizinate, and stearyl glycyrrhetinate

2b. Glycyrrhizia glabra (licorice), Glycyrrhizia glabra (licorice) extract, Glycyrrhizia inflata, and Glycyrrhizia inflata root extract

3. 4-Amino-3-nitrophenol, 2-amino-3-nitrophenol, 2-amino-4-nitrophenol, 2-amino-5-nitrophenol, and 2-amino-4-nitrophenol sulfate
4. Ammonium thioglycolate, butyl thioglycolate, calcium thioglycolate, ethanolamine thioglycolate, ethyl thioglycolate, glyceryl thioglycolate, isocetyl thioglycolate, isopropyl thioglycolate, magnesium thioglycolate, methyl thioglycolate, potassium thioglycolate, sodium thioglycolate, phenylthioglycolic acid, and thioglycolic acid
5. Basic violet 3
6. Cinnamal, cinnamyl acetate, and cinnamyl alcohol (on hold pending findings of the RIFM)
7. Corn (Zea mays) oil, corn acid, corn gluten amino acids, corn glycerides, corn oil PEG-6 esters, corn oil PEG-8 esters, corn (Zea mays) cob meal, corn (Zea mays) cob powder, corn (Zea mays) extract, corn (Zea mays) flour, corn (Zea mays) germ oil, corn (Zea mays) gluten protein, corn (Zea mays) oil unsaponifiables, and corn (Zea mays) starch

8. Disperse blue 7
9. HC red No. 7
10. Hexamidine and hexamidine diisethionate
11. Methyl acetate
12. Methylparaben, ethylparaben, propylparaben, isopropylparaben, butylparaben, isobutylparaben, and benzylparaben
13. Phytantriol
14. Phenylenediamine group
15. Piper methysticum (Kava Kava)
16. Poloxamer 101, 105, 108, 122, 123, 124, 181, 182, 183, 184, 185, 188, 212, 215, 217, 231, 234, 235, 237, 238, 282, 284, 288, 331, 333, 334, 335, 338, 401, 402, 403, 407, and polaxamer 105 benzoate
17. Polyethylene
18. Ricinus communis (castor) seed oil, glyceryl ricinoleate, glyceryl ricinoleate SE, and hydrogenated castor oil
19. Trichloroethane

Progress on each of these safety assessments may be monitored on the CIR web site at URL: http://www.cir-safety.org. Questions may be sent to cirinfo@cir-safety.org.

DISCUSSION

With almost 1200 individual cosmetic ingredients reviewed (collectively used in more than 100,000 cosmetic products), more than 90% of the ingredients considered by the CIR Expert Panel may be used safely in cosmetics, either with some qualification or in the current practices of use.

There remain insufficient resources available at the FDA for the Agency to implement its own review of safety data on the vast array of cosmetic ingredients. Where a clear hazard is identified, FDA can and does take action. As FDA continues to cope with an endless list of priorities, with issues such as bioterrorism and the safety of the food supply coming in at a higher priority than cosmetic ingredients, the CIR program performs a useful role in evaluating the safety of cosmetic ingredients.

How has the CIR program performed? The CIR Expert Panel has identified limitations on 33% of ingredients it has reviewed in order that they be used safely. These findings empower manufacturers to avoid pitfalls and use ingredients safely. For another 9% or so, the industry has been placed on alert that the available data are insufficient. Perhaps the most important findings of all: a handful of ingredients have been identified as unsafe for use in cosmetics.

Scientific challenges remain. Although it is recognized that there are sensitive subpopulations such as individuals with atopic dermatitis, other sensitive subpopulations may also be of concern. For hair dyes, for example, one hypothesis is that genetically susceptible subgroups that detoxify arylamines to a lower degree than the general population may be at greater risk of bladder cancer from hair dye exposures. This can be tested only with additional studies, several of which are underway. Another example of ongoing scientific challenges is parabens. These ingredients are the most widely used preservatives in cosmetics. At what exposure levels will the recently reported endocrine disruption and reproductive toxicity be important?

Although funding for the CIR program is provided by CTFA, the CIR Expert Panel deliberates in open, public sessions; insists that conclusions be supported by data; and publishes its results in the peer-reviewed scientific literature. The industry is unique in this regard because it actively seeks critiques of safety data, through the CIR process, from the scientific and medical community. The commitment by those companies in the personal care products industry to support CIR has not waned over the years. The CIR program has entered the new millennium assured of both continued financial support and independence in decision making.

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