



January 31, 2012

Robert J. Howell, Deputy Executive Director for Safety Operations
Office of the Executive Director
U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

Dear Mr. Howell,

On behalf of the High Phthalates Panel (HP Panel) of the American Chemistry Council, I write to highlight some areas of concern and offer comments regarding the discussions among the members of the Chronic Hazard Advisory Panel (CHAP) on Phthalates at the November 2011 meeting. The HP Panel represents North American manufacturers of diisononyl phthalate (DINP) and diisodecyl phthalate (DIDP) which are products included in the CHAP review.

The HP Panel has followed the CHAP proceedings closely, and we appreciate the efforts of the CHAP to date. We recognize that the scope of the CHAP's work, as outlined in Section 108 of the Consumer Product Safety Improvement Act (CPSIA), has necessitated a critical review of a vast amount of information. We acknowledge that the discussions at the November meeting were preliminary; however, the CHAP members appeared to be moving toward making a recommendation to the Consumer Product Safety Commission (CPSC) to make permanent the interim restrictions on one or more phthalates in children's toys and child care articles. We are concerned that these preliminary conclusions are not supported by the science presented to the CHAP. We offer comments and raise concerns in the following areas that are vital to informing any recommendation:

- **The CHAP Should Apply a Risk-based Approach in Its Determinations, Not a Hazard-based Approach.** The CHAP appears to be emphasizing a precautionary hazard-based approach in its determinations rather than a risk-based approach.
- **The CHAP Should Perform Risk Assessments on Relevant Alternatives, Including Other Phthalates.** The CHAP should recognize that it is also charged with performing a risk assessment on alternatives, even where there is a lack of data.
- **The CHAP Should Consider Prior Regulatory Agency Findings.** The discussions at the November CHAP meeting seemed to diverge greatly from the methodology and findings of previous reviews of DINP and DIDP by regulatory bodies in the United States and Europe, and there was little indication that previous findings have been given due consideration.
- **The CHAP Should Demonstrate that It has Considered the Weight of the Evidence.** Although much information has been provided to the CHAP for review and consideration, it is not clear whether the CHAP has in fact considered the weight of the evidence presented, or considered "all relevant data" pursuant to CPSIA § 108(b)(2)(B)(v).

Attached to this letter is a detailed summary of our concerns and comments in each of these areas.



We appreciate this opportunity to present our comments and concerns, and request that you share our thoughts with the CHAP on Phthalates and CPSC staff. The CHAP has accomplished much over the last several months, but any recommendations to the CPSC based upon the CHAP's considerable work to date must be scientifically based and grounded in a risk-based approach that considers previous reviews by regulatory bodies in the United States and Europe, that considers the weight of the evidence and all relevant data, that examines all alternatives, including other phthalates, notwithstanding the availability of data, and that clearly sets forth the scientific justification for each of its conclusions. We look forward to the CHAP's continuing discussions. If the CHAP requires further information, please do not hesitate to contact me at (202) 249-6711 or eileen_conneely@americanchemistry.com if you have any questions about our comments and concerns.

Very truly yours,

Eileen Conneely

Eileen Conneely
Manager, High Phthalates Panel
Director, Chemical Products and Technology Division

cc:

Cheryl A. Falvey, General Counsel
Dr. Michael Babich, Manager, CHAP on Phthalates
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Mary Ann Danello, Associate Executive Director, Directorate for Health Sciences
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Letter to Robert J. Howell, CPSC, Attachment

The CHAP Should Apply a Risk-based Approach in Its Determinations, Not a Hazard-based Approach

The discussions at the November meeting seemed to indicate that the CHAP is placing particular emphasis on a precautionary hazard-based approach similar to that used by European legislators, i.e. the belief that chemicals should be restricted or banned if they are found to cause effects deemed to be adverse at any level. The standard used in the United States is a risk-based approach that examines risk as a function of two parameters – exposure and hazard – and assesses data to inform risk management policy decisions.

The CHAP is charged with assessing likely levels of exposure based upon “a reasonable estimation of normal and foreseeable use and abuse” of children’s toys and child care articles. CPSIA § 108(b)(2)(B)(iii). At the November 2011 CHAP meeting, there were numerous references to an assumed increase in exposure to DINP as it supposedly would be used to replace the permanently restricted phthalates. This is speculative at best. One such reference was that DINP was slated to replace DEHP in toys. It should be noted that this substitution occurred voluntarily in the 1980s and furthermore, due to the CPSIA temporary restrictions, DINP has also now been replaced.

The exposure calculations from the U.S. Centers for Disease Control and Prevention (CDC) National Health and Nutrition Examination Survey (NHANES) biomonitoring data are extremely conservative, as they 1) generally reflect exposure levels assessed prior to the permanent and interim bans, and 2) encompass all exposures without separating out exposure from children’s toys and child care articles.¹ Even with these conservative figures, the aggregate exposure to DINP and DIDP from all sources is extremely low.² If the CHAP were then to include speculative assumptions in its calculations of likely levels of exposure, it would result in unrealistic exposure estimates that are not based upon a “reasonable estimation.” As noted by Cheryl Falvey in the December 19, 2011 CHAP conference call, concern with potential exposures is the basis for the CPSC’s ultimate decision. Additionally, the CHAP is basing exposure calculations on the 95th percentile, lending additional conservatism to the exposure estimate. Most risk assessment methodologies recommend using the mean.³ The CHAP should make recommendations based solely on reasonable estimations that can be distilled from objective judgment of data and science, taking both exposure and hazard into account. The

¹ http://www.cdc.gov/exposurereport/data_tables/chemical_group_12.html.

² Even with these conservative estimates, the aggregate exposure from all sources is extremely low. Biomonitoring data for DINP for aggregate exposure for children ages 6-11 from all sources demonstrate a mean of approximately 3 ug/kg/day and a 95th percentile of approximately 13 ug/kg/day. Biomonitoring data for DIDP for aggregate exposure for children ages 6-11 from all sources demonstrate a mean of less than 1 ug/kg/day and a 95th percentile of less than 8 ug/kg/day. Fourth National Report on Human Exposure to Environmental Chemicals, CDC, 2009. The 2001 report to the CPSC by the CHAP on DINP calculated an acceptable daily intake of 120 ug/kg/day for DINP based upon the application of a 100-fold combined uncertainty/adjustment factor. Report to the U.S. Consumer Product Safety Commission by the Chronic Health Advisory Panel on Diisononyl Phthalate (DINP), June 2001 (“CHAP Report on DINP”), Executive Summary at 3.

³ See e.g. Hays, S.M. et al. (2008). Guidelines for the Derivation of Biomonitoring Equivalents: Report from the Biomonitoring Equivalents Expert Workshop, Regulatory Toxicology and Pharmacology 51: S4–S15, S13.



CHAP cannot choose to use estimations not based on “reasonable estimation” like those described above.

The CHAP Should Perform Risk Assessments on Relevant Alternatives, Including Other Phthalates

The CHAP should carefully consider “all relevant data,” which includes recognition that while there is a lack of data for some chemicals, a risk assessment should still be performed on those chemicals. The testing of many non-phthalate alternatives is not on par with the extensive research conducted on phthalates. For example, not all phthalates and phthalate alternatives have biomonitoring data. However, the CHAP is charged with making a risk assessment of alternatives notwithstanding the availability of data. As Cheryl Falvey noted in the December 19, 2011 CHAP conference call, without the science on the risk of each phthalate and the risk of each of the alternatives, the Commission will not be able to assess whether it can make “tradeoffs.”

The CHAP Should Consider Prior Regulatory Agency Findings

The discussions at the November CHAP meeting seemed to diverge greatly from the methodology and findings of previous studies of DINP and DIDP by regulatory bodies in the United States and Europe. Although the CHAP was charged with a “de novo” review, the CPSIA specifically directs the current CHAP to review the findings and conclusions of any previous Chronic Hazard Advisory Panel on phthalates. CPSIA § 108(b)(2)(B). Should its conclusions differ from those of prior assessments, the CHAP should clearly explain in its report the scientific basis for coming to conclusions that differ from those of previous scientific assessments. As the CHAP is aware, the 2001 Report to the CPSC by the CHAP on Diisononyl Phthalate (DINP) was a product of an extensive inquiry by a panel of independent experts. That panel concluded that “[f]or the majority of children, the exposure to DINP from DINP-containing toys would be expected to pose a minimal to non-existent risk of injury.” The maximum acceptable daily intake (ADI) used by the prior CHAP was extremely conservative, and was lower than the ADI derived from the reproductive and developmental data for DINP.⁴ Additionally, in 2002 CPSC staff conducted an extensive observational exposure study of the potential chronic hazards associated with DINP in children’s products, measured the level of migration of DINP from children’s products, and conducted an updated risk assessment concerning DINP. CPSC staff concurred with the CHAP conclusion that exposure to DINP from mouthing soft plastic toys would be expected to pose a minimal to non-existent risk of injury for the majority of children.⁵ On February 21, 2003, the CPSC voted unanimously to deny the petition calling for a ban on the use of DINP in children’s products.⁶ In an accompanying statement, Commissioner Thomas H. Moore wrote: “The clear weight of the evidence produced

⁴ CHAP Report on DINP, Executive Summary at 3.

⁵ Response to Petition HP 99-1, Directorate for Health Sciences, U.S. Consumer Product Safety Commission, August 2002.

⁶ Letter from Todd A. Stevenson, Secretary, CPSC, to Jeffrey Becker Wise, National Environmental Trust, February 26, 2003.



by staff supports the conclusion that children are not at risk from mouthing products currently on the market that contain diisononyl phthalate (DINP).⁷

In a 2007 letter to California Senator George Runner regarding children's toys and polyvinyl chloride (PVC), the CPSC staff reinforced its 2002 decision and indicated "that the CPSC staff has kept abreast of the new research and has not seen anything that would cause a change in the staff's position on this issue."⁸

Furthermore, the National Toxicology Program's Center for the Evaluation of Risks to Human Reproduction (NTP-CERHR) concluded in 2002 that there was "negligible concern" regarding risk of developmental or reproductive effects from current exposure levels to DIDP and "minimal concern" regarding risk of developmental or reproductive effects from current exposure levels to DINP.⁹

In addition, the European Union (EU) conducted risk assessments on a number of phthalates, including DINP and DIDP. The final risk assessment report on DINP, completed in 2003 by the EU's European Chemicals Bureau and adopted in 2006 by the European Commission, found that the end products containing DINP (including toys and baby equipment) and the sources of exposure are unlikely to pose a risk for adults, infants or newborns following inhalation, skin contact and ingestion.¹⁰ As the CHAP is aware, the European Commission subsequently determined that no classification should be given to DINP; that is, it is not classified as a carcinogen, a mutagen, or a cause of reproductive or developmental toxicity.¹¹ The European

⁷ Statement of the Hon. Thomas H. Moore on the Petition to Ban Polyvinyl Chloride in Products Intended for Children Five Years of Age and Under, February 21, 2003, available at:

<http://www.cpsc.gov/library/foia/foia03/petition/ageunder.PDF>.

⁸ Letter from Jacqueline Elder, Assistant Executive Director, Office of Hazard Identification and Reduction, CPSC, to Senator George Runner, July 27, 2007, at 2.

⁹ CERHR (2003a). NTP-CERHR Monograph on the Potential Human Reproductive and Developmental Effects of Di-isononyl Phthalate (DINP), NIH Publication No. 03-4484, March 2003, National Toxicology Program Center for the Evaluation of Risks to Human Reproduction, Research Triangle Park NC, available at:

http://ntp.niehs.nih.gov/ntp/ohat/phthalates/dinp/DiNP_Monograph_Final.pdf; CERHR (2003b). NTP-CERHR Monograph on the Potential Human Reproductive and Developmental Effects of Di-isodecyl Phthalate (DIDP), NIH Publication No. 03-4485, March 2003, National Toxicology Program Center for the Evaluation of Risks to Human Reproduction [now the Office of Health Assessment and Translation], Research Triangle Park NC, available at http://ntp.niehs.nih.gov/ntp/ohat/phthalates/didp/DIDP_Monograph_Final.pdf.

¹⁰ ECB (2003a). European Union Risk Assessment Report Vol. 35: 1,2-benzenedicarboxylic acid, di-C8-10-branched alkyl esters, C9-rich, and di-"isononyl" phthalate (DINP). Report no.: EUR 20784 EN, European Chemicals Bureau, European Communities, available at

<http://publications.jrc.ec.europa.eu/repository/bitstream/11111111/5395/1/EUR%2020784%20EN.pdf>;

EC (2006a). Commission Recommendation of 11 April 2006 on risk reduction measures for the substances: Dibutylphthalate; 3,4-Dichloroaniline; Di-'isodecyl' phthalate; 1,2-Benzenedicarboxylic acid, di-C9-11-branched alkyl esters, C10-rich; Di-'isononyl' phthalate; 1,2-Benzenedicarboxylic acid, di-C8-10-branched alkyl esters, C9-rich; Ethylenediaminetetraacetate; Methyl acetate; Monochloroacetic acid; n-Pentane; Tetrasodium ethylenediaminetetraacetate. (2006/283/EC) O.J. L104 (13 April 2006), pp. 45- 47, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:104:0045:0047:EN:PDF>.

¹¹ EC (2006b). Commission Communication on the results of the risk evaluation and the risk reduction strategies for the substances: Dibutylphthalate; 3,4-Dichloroaniline; Di-'isodecyl' phthalate; 1,2-Benzenedicarboxylic acid, di-C9-11-branched alkyl esters, C10-rich; Di-'isononyl' phthalate; 1,2-Benzenedicarboxylic acid, di-C8-10-branched alkyl esters, C9-rich; Ethylenediaminetetraacetate; Methyl acetate; Monochloroacetic acid; n-Pentane; tetrasodium



Chemicals Bureau risk assessment on DIDP similarly found that the end products containing DIDP and the sources of exposure are unlikely to pose a risk for consumers (adults, infants and newborns).¹² “For infants, combined exposure, which is mainly related to exposure via the environment, is not considered of concern.”¹³

Since these regulatory bodies based their reports on sound science, and since no new data presented to the current CHAP has indicated a basis for reaching a risk conclusion different from previous findings (i.e., that the use of DINP and DIDP in current applications is unlikely to present a health risk and that exposures are well within safe limits and safe as used in current applications), the CHAP should take into account these findings as it assesses “all relevant data.” Recommendations made based on a perception of how it would look to remove the temporary ban or the belief that the CHAP should send a message that “something needs to be done to stem this rise in exposures” are not based on science and are not the purview of the CHAP.¹⁴ Although the CHAP is charged with conducting a de novo review, any conclusions found to be at odds with prior assessments’ conclusions should be clearly and scientifically explained in the final CHAP report.

The CHAP Should Demonstrate That It has Considered the Weight of the Evidence

Although much information has been provided to the CHAP for review and consideration, it is not clear whether the CHAP has in fact considered the weight of the evidence presented, or considered “all relevant data” pursuant to its charge under the CPSIA. For example, CHAP members incorrectly stated that there is no developmental toxicity data for DIDP. Both the CPSC staff reports¹⁵ provided to the CHAP in March 2010, as well as multiple ACC and ExxonMobil submissions,¹⁶ have referenced the two developmental DIDP toxicity studies performed by Hushka et al.¹⁷ Additionally, the CHAP did not discuss the findings of the European Chemicals Bureau Risk Assessment on DINP during the November session, and it appears that the CHAP has not given that report its due consideration. In contrast, in its preliminary discussions concerning DIDP, the CHAP discussed briefly the EU Risk Assessment Report on DIDP, noting that the report detailed minimal concerns regarding current uses of

ethylenediaminetetraacetate. O.J. C90 (14 April 2006), pp. 10-15, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2006:090:0004:0028:EN:PDF>.

¹² ECB (2003b). European Union Risk Assessment Report Vol. 35: 1,2-benzenedicarboxylic acid, di-C9-11-branched alkyl esters, C10-rich and: di-"isodecyl" phthalate (DIDP). Report no.: EUR 20785 EN, European Chemicals Bureau, European Communities, available at: <http://publications.jrc.ec.europa.eu/repository/bitstream/11111111/5459/1/EUR%2020785%20EN.pdf>.

¹³ Although in the EU risk assessment the panel expressed some concern around the use of DIDP in children’s toys based on a study from 1968 showing liver weight increase accompanied by swollen and vacuolated hepatocytes in a 13 week oral study concerning dogs, the panel stated that the “poor reliability of the study should be stressed.” ECB (2003b).

¹⁴ See CHAP Meeting broadcast Friday November 4, 2011 Session 2, available at: <http://www.cpsc.gov/about/cpsia/chap1111.html>.

¹⁵ <http://www.cpsc.gov/about/cpsia/toxicityDIDP.pdf>.

¹⁶ <http://www.cpsc.gov/about/cpsia/chap/exxonSub.pdf>; <http://www.cpsc.gov/about/cpsia/chap/bachman.pdf>; <http://www.cpsc.gov/about/cpsia/chap/accCommAppA.pdf>; <http://www.cpsc.gov/about/cpsia/chap/exxonDIDP.pdf>.

¹⁷ Hushka, L.J., Waterman, S.J., Kellerb, L.H., Trimmera, G.W., Freeman, J.J., Ambroso, J.L., Nicolich, M., and McKee, R.H. (2001). Two-generation reproduction studies in rats fed diisodecyl phthalate. *Reproductive Toxicology*, 15:153-169.



DIDP.¹⁸ We have also seen no discussions concerning the physical and chemical properties of DINP and DIDP that inherently limit the degree of exposure reasonably foreseeable in current applications.¹⁹ The evidence presented to the CHAP and “all relevant data” demonstrates that DINP and DIDP are safe as used in current applications.

Weight of the Evidence Should Include Acknowledgement of Existing Research

Additionally, it appears that the CHAP has not given equal consideration to findings demonstrating that rat studies may not be relevant to humans. During the CHAP session on November 2, 2011, two invited experts, Dr. Kim Boekelheide and Professor Richard M. Sharpe, each presented data to the CHAP from separate studies, both of which demonstrated that human response to phthalates is more like that of mice than of rats, and that mice are refractory to some of the developmental effects seen in rats. When asked at the end of his presentation whether he would still consider phthalate syndrome in animals comparable to human testicular syndrome Professor Sharpe replied yes, but that it was not related to phthalate exposure.²⁰ The CHAP report should acknowledge that if this research is ultimately shown to be correct, it indicates that exposure to phthalates may not pose reproductive risks to humans.

Scientific Terms and Concepts Should be Clearly Defined, Discussed, and Consistently Applied

Furthermore, there has been very limited discussion concerning many of the controversial terms and concepts discussed during the CHAP meetings, including “endocrine disruptor,” “rat phthalate syndrome,” “adverse effect,” “reproductive toxicant,” “acceptable margin of exposure,” and “dose addition at low doses.” The CHAP report should clearly lay out the definitions and/or references used for such terms and the science that supports the use of these terms in the assessment of each phthalate and phthalate alternative. For those terms or concepts that are considered new, emerging or controversial, the CHAP report should acknowledge this fact and discuss the scientific sensitivities associated with each. For example, in the context of discussing whether a particular phthalate is an endocrine disruptor, the CHAP did not clearly define what is considered a “reproductive toxicant,”²¹ what effect is considered an “adverse

¹⁸ See CHAP Meeting broadcast Wednesday November 2, 2011 Session 2, available at:

<http://www.cpsc.gov/about/cpsia/chap1111.html>.

¹⁹ The physical/chemical properties of DINP and DIDP – low dermal absorption, low water solubility and low volatility – inherently limit the degree of exposure reasonably foreseeable from consumer uses. See <http://www.cpsc.gov/about/cpsia/chap/exxonSub.pdf> at page 8.

²⁰ See CHAP Meeting broadcast Friday November 4, 2011 Session 2, available at:

<http://www.cpsc.gov/about/cpsia/chap1111.html>.

²¹ See, e.g., Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Third revised edition, United Nations, 2009, available at: http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html.

Reproductive toxicity is defined in relevant part as follows:

Reproductive toxicity includes adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring. . . . [R]eproductive toxicity is subdivided under two main headings: a) Adverse effects on sexual function and fertility; b) Adverse effects on development of the offspring. . . .

Adverse effects on sexual function and fertility are defined as follows:

Any effect of chemicals that would interfere with sexual function or fertility. This may include, but not be limited to, alterations to the female and male reproductive system, adverse effects on onset of puberty, gamete production and transport, reproductive cycle normality, sexual behavior, fertility, parturition, pregnancy outcomes, premature reproductive senescence, or modifications in other functions that are dependent on the integrity of the reproductive systems.

Adverse effects on development of the offspring are defined as follows:



effect,” and whether certain effects truly meet the definition of an adverse effect. The World Health Organization’s International Programme on Chemical Safety (IPCS) developed the following definition for an endocrine disruptor: “An endocrine disruptor is an exogenous substance or mixture that alters function(s) of the endocrine system and consequently causes adverse health effects in an intact organism, or its progeny, or (sub) populations.”²² An endocrine disruptor therefore modulates the endocrine system and leads to an adverse health effect. EPA’s Integrated Risk Information System (IRIS) program defines an adverse effect as: “A biochemical change, functional impairment, or pathologic lesion that affects the performance of the whole organism, or reduces an organism’s ability to respond to an additional environmental challenge.”²³ Using these accepted definitions to frame the analysis, no evidence has been submitted to the CHAP that demonstrates that either DINP or DIDP modulate the endocrine system in a manner that leads to adverse health effects.²⁴ The Hamner Institutes Study presented to the CHAP by Dr. Clewell showed no adverse effects associated with a transient decrease in testosterone, and the study by Hannas, et al. showed that DIDP did not reduce fetal testicular T production.²⁵ Yet in the absence of clearly defined terms, the preliminary discussions have included statements to the effect that a certain phthalate should be regarded as a reproductive toxicant and an endocrine disruptor.²⁶ In these preliminary discussions, the CHAP members have suggested that transient effects on fetal testosterone levels are an adverse effect. However, transient effects on fetal testosterone levels have not been shown to lead to adverse effects in rats and are not expected to lead to adverse health effects in humans.²⁷ Regarding dose-addition at low doses, the report should clearly acknowledge there is some indication that there is no dose addition at low doses and that if true, this would indicate the cumulative risk may be zero.²⁸

Taken in its widest sense, developmental toxicity includes any effect which interferes with normal development of the conceptus, either before or after birth, and resulting from exposure of either parent prior to conception, or exposure of the developing offspring during prenatal development, or postnatally, to the time of sexual maturation. However, it is considered that classification under the heading of developmental toxicity is primarily intended to provide hazard warning for pregnant women and men and women of reproductive capacity. Therefore, for pragmatic purposes of classification, developmental toxicity essentially means adverse effects induced during pregnancy, or as a result of parental exposure. These effects can be manifested at any point in the life span of the organism. The major manifestations of developmental toxicity include death of the developing organism, structural abnormality, altered growth, and functional deficiency.

²² International Programme on Chemical Safety - World Health Organization, Global Assessment of the State-of-the-Science of Endocrine Disruptors. 2002.

²³ IRIS glossary, available at: http://www.epa.gov/iris/help_gloss.htm.

²⁴ See also the ECPI presentations to the CHAP where DINP and DIDP are examined through the OECD conceptual framework, available at: www.cpsc.gov/about/cpsia/chap/hallmark.pdf; <http://www.cpsc.gov/about/cpsia/chap/ecpi1.pdf>; <http://www.cpsc.gov/about/cpsia/chap/ecpi2.pdf>.

²⁵ See <http://www.cpsc.gov/about/cpsia/chap/dinp.pdf>; Hannas, B.R., Lambright, C.S., Furr, J., Evans, N., Foster, P.M.D., Gray, L.E., and Wilson, V.S. (2011). Genomic biomarkers of phthalate-induced male reproductive developmental toxicity: A targeted rtPCR array approach for defining relative potency. *Toxicol. Sci.* doi: 10.1093/toxsci/kfr315. First published online: November 22, 2011. <http://toxsci.oxfordjournals.org/content/early/2011/11/22/toxsci.kfr315.abstract>.

²⁶ See Thursday November 3, 2011 Session 3, available at: <http://www.cpsc.gov/about/cpsia/chap1111.html>.

²⁷ See Hamner Institutes study, available at: <http://www.cpsc.gov/about/cpsia/chap/dinp.pdf>.

²⁸ http://ec.europa.eu/health/scientific_committees/environmental_risks/docs/scher_o_150.pdf. “Interactions (including antagonism, potentiation, synergies) usually occur at medium or high dose levels (relative to the lowest effect levels). At low exposure levels, they are either not occurring or toxicologically insignificant.”



Finally, the CHAP has not set forth the criteria for its determination of the appropriate margin of exposure/margin of safety. The CPSC has set forth the following guidelines for calculating the ADI for neurotoxicological and developmental/reproductive agents:

(ii) *ADI for Neurotoxicological and Developmental/Reproductive Agents*. Due to the difficulties in using a numerical risk assessment method to determine risk for neurotoxicological or developmental/reproductive toxicants, the Commission is using a safety factor approach, as explained below.

...

(B) *Animal Data*. If the hazard is ascertained from animal data, a safety factor of one hundred will be applied to the lowest NOEL. If no NOEL can be determined, a safety factor of one thousand will be applied to the lowest LOEL. Both the NOEL and LOEL are defined in terms of daily dose level.

16 C.F.R. § 1500.1359(d)(4). As Cheryl Falvey stated on the December 19, 2011 conference call, the CHAP must give the scientific justification of its choice of safety factor, and must have a scientific and not a policy basis for that choice.²⁹ No additional uncertainty factor for children is necessary because of the rich developmental data available on these phthalates.³⁰ The CHAP's preliminary discussions have demonstrated some uncertainty with the choice of a safety factor, and the CHAP's "feeling" that the severity of the risks warrants additional uncertainty factors is not a sufficient scientific basis for choosing a different safety factor, especially here where the high exposure estimates are extremely conservative.

We urge the CHAP members to discuss the terms they are using and the basis for their choices.

²⁹ See memorandum from Cheryl Falvey, General Counsel, concerning the CHAP teleconference dated December 19, 2011, available at: <http://www.cpsc.gov/about/cpsia/chap/cfalvey12202011.pdf>.

³⁰ See, e.g., CERHR (2003a); CERHR (2003b); ECB (2003a); ECB (2003b).

