

Consolidated NGO Submission

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Final Screening Assessment and the Proposed Risk Management Approach
for
Phenol, 4,4'-(1-methylethylidene)bis-(Bisphenol A), CAS No. 80-05-7

Submitted to:
Environment Canada
Health Canada

December 17, 2008

Submitted by the following organizations:

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York Region Environmental Alliance
The Gaia Group
Toxic Free Canada
Breast Cancer Action Montreal
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Environmental Health Association of Nova Scotia (EHANS)
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December 17, 2008

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Re: Consolidated non-government organization (NGO) submission on the Proposed Risk Management Approach for Bisphenol A (BPA), October 18, 2008

Introduction

This submission is presented in response to the Government of Canada's proposed risk management approach for bisphenol A (BPA), published in October, 2008.¹

Exposure to BPA, even at low levels, may result in a wide range of reproductive and developmental effects. It is well established as an endocrine disrupting substance. Expert panels on BPA and more than 150 peer-reviewed studies have associated BPA with obesity, attention deficit hyperactivity disorder, breast cancer, prostate cancer, immune system dysfunction, early puberty in females, higher rates of miscarriage, and a wide range of developmental problems.² Most recently, a study published in the *Journal of the American Medical Association* linked, for the first time, 'normal' levels of BPA in a large human population in the U.S. with higher risk of heart disease and diabetes.³

BPA has an extensive use pattern. It is prevalent in numerous commonly-used consumer products, from polycarbonate baby bottles, water bottles and food cans; paints, water pipes, medical devices, computer parts, windshields, dental products, adhesives, and lubricants to the production of some polyesters, polyurethanes and polyvinyl chloride, and in cosmetics. Its diversity of uses creates a myriad of exposure routes and leads to widespread contamination of the environment.

Human exposure to BPA occurs mainly through dietary intake and also through environmental media (ambient air, indoor air, drinking water, soil and dust), consumer product usage and other sources. Migration of BPA has been detected from food packaging (e.g. lining of food and drink containers, canned infant formula intended for newborns and infants), baby bottles, and other BPA-containing plastics used for food and liquid storage. BPA can accumulate in the womb, exposing the fetus to levels higher than those throughout other stages of life. In addition, BPA has been detected in breast milk at levels nearly as high as those found in infant formula.

¹ *Proposed Risk Management Approach for Phenol, 4,4'-(1-methylethylidene)bis (Bisphenol A)* (80-05-7). Government of Canada, October, 2008. (Proposed Risk Management Approach)

² Maffini, M.V., Rubin, B.S., Sonnenschein, C., and Soto, A.M. "Endocrine disruptors and reproductive health: The case of bisphenol A." *Molecular and Cellular Endocrinology* 2006, 25:179-186.

³ vom Saal, Frederick S. and John Peterson Myers. "Bisphenol A and Risk of Metabolic Disorders." *Journal of the American Medical Association*. 2008, 300 (11):1353-1355.

BPA has also been detected in surface water, sediments and groundwater. It is acutely toxic to aquatic organisms. Low-doses of BPA can have adverse effects on fish and reptiles, particularly at sensitive developmental stages. Impacts from BPA may affect future generations.

The signatories to this submission support the proposal of the Government of Canada to list BPA as a toxic substance under Schedule 1 of the Canadian Environmental Protection Act. Further, we support the government's proposals to ban polycarbonate baby bottles, and to conduct further monitoring and research on BPA as it affects the environment and human health. These actions are a start, but considering the serious potential and health and environmental effects of BPA, the proposed actions by the Government, as outlined in the Proposed Risk Management Approach, fall far short of our expectations.

We expect the risk management approach to be comprehensive, preventive and precautionary, to adopt the protection of human health and the environment as the primary principles in developing appropriate action on this toxic substance, and to include immediate actions that will result in significant reduction in BPA exposure to Canadians and the environment in the near future. Instead, beyond banning polycarbonate baby bottles, the proposed risk management approach is vague and non-committal.

The Government proposes to “develop stringent migration targets for bisphenol-A in infant formula cans,” and to work with industry to implement codes of practice “aimed at reducing levels of bisphenol A in canned infant formula to the lowest reasonably achievable levels.” It also promises regulations within 24 months to “minimize the risks from releases of bisphenol A into the environment,” including “establish(ing) maximal concentrations at the effluent;” requiring best management systems; monitoring industrial releases; and a verification protocol. Finally, there will be efforts to work with provincial, territorial and municipal authorities to “minimize the quantities of bisphenol A released to the Canadian environment, from the disposal or recycling of products containing bisphenol A.”

The descriptions of these actions are qualified by such phrases as “explore the option,” “consider implementing,” and “explore with industrial users ... how this regulatory approach would be implemented.” No timelines are specified for achieving “lowest reasonably achievable levels” of BPA in infant formula. There is no sense of when regulations concerning release to the environment, even if promulgated within 24 months, would actually take effect, and what results might be achieved.

No actions are proposed for other BPA-containing products, beyond “explor(ing) the option of establishing strict migration targets for bisphenol A in canned foods in general”. The pregnant woman/fetus, clearly identified as vulnerable populations in the screening assessment, is not included in the risk management approach. No consideration is given to exposure of the adult population to BPA from food, the workplace, and other sources.

Given the insidious and ubiquitous nature of BPA, the risk management approach needs to be far more comprehensive and precautionary than it presently is. Several studies

provide support to the accumulating evidence that BPA is hazardous to human health and that precautionary measures are needed to prevent exposure to BPA.

Efforts must be directed toward reducing and eliminating the use of BPA and finding safer alternatives, not only on preventing and minimizing releases.

Our specific concerns and recommendations are outlined in subsequent sections of this submission.

A. Vulnerable populations - pregnant woman/fetus and nursing infant

The Screening Assessment for BPA identifies the pregnant woman/fetus and infant as potentially sensitive subpopulations.⁴ While the Proposed Risk Management Approach indicates that there is to be some protection for infants bottle-fed with infant formula, in the form of a ban on polycarbonate baby bottles and the promise of a limitation on allowable concentrations of BPA in infant formula, no protective actions for the other most vulnerable groups, the fetus and the breast-fed infant, are being proposed.

In light of the facts that

- (a) There is evidence that BPA levels in the fetus are higher than in the pregnant mother. The assessors suggested that repeated BPA exposure could lead to elevated *in utero* exposures⁵
- (b) Intake of BPA by breast-fed infants has been estimated as being less than, but comparable to, formula-fed infants⁶
- (c) Health Canada “continues to recommend exclusive breastfeeding for the first six months of life, followed by the gradual introduction of other nutritious foods in addition to breastfeeding, which should continue up to two years of age or more” <http://www.chemicalsubstanceschimiques.gc.ca/faq/bisphenol_a_qa-qr_e.html#17> and
- (d) The proposed human health objective of the Proposed Risk Management document, is “to minimize infant exposure to the greatest extent practicable,”⁷

we are very concerned that the Proposed Risk Management Approach contains no specific measures to protect the fetus or the breast-fed infant, which requires protecting the pregnant and nursing mother.

Recommendations

1. Protecting the fetus should be a key focus of risk management activities preventing harm to human health.
2. The protection of infants must go beyond measures to protect the formula-fed infant to include measures to protect the nursing infant.
3. The ban on polycarbonate baby bottles should be extended to all polycarbonate reusable water bottles and children’s sippy cups.

⁴ Environment Canada and Health Canada, *Screening Assessment for the Challenge Phenol, 4,4’ -(1-methylethylidene)bis- (Bisphenol A)*. October 2008, p. 58. (Screening Assessment)

⁵ *ibid.*, pp. 56-57.

⁶ *ibid.*, pp. 37-38.

⁷ *ibid.*, p. 12.

4. The Government should require the elimination of BPA from all packaging coming into contact with food, including, but not limited to, infant formula.
5. There should be an emphasis on reducing the use of BPA in household products, given the high levels of this substance found in house dust.
6. The Government should immediately develop health advisories, disseminated through Health Canada offices and clinics, advising women on health concerns related to BPA as outlined in the final screening assessment and offering practical suggestions for avoiding potential sources of BPA, including, but not limited to, polycarbonate food and drink containers and canned foods.

B. Recent Research/Studies on BPA

New studies continue to mount on the adverse health effects of exposure to BPA in adults. The results of these studies have pointed to an association between low-dose BPA exposure and:

- an elevated risk for cardiovascular disease and Type 2 adult-onset diabetes⁸
- interfering with the formation of some types of synapses in the brain⁹
- reducing the efficacy of chemotherapeutic agents¹⁰ and
- an increased likelihood of developing prostate and breast cancer, and early puberty.¹¹

These studies add to the growing weight of evidence that developmental and continuing exposure to BPA can cause adverse effects in adulthood.

In its peer review of the U.S. Food and Drug Administration (FDA) assessment of BPA in food contact applications, the FDA Science Board Subcommittee on BPA stated, “Consideration should be given to several studies of effects of BPA on adult humans and animal species that were published after the assessment was finished.”¹² The committee also commented on the need to consider the potential cumulative and interactive effects of non-food contact exposures to BPA.

⁸ Lang, I.A., Galloway, T.S., Scarlett, A., Henley, W.E., Depledge, M., Wallace, R.B., and Melzer, D. (2008) Association of urinary bisphenol A concentration with medical disorders and laboratory abnormalities in adults. *Journal of the American Medical Association* 300(11):1303-1310.

⁹ Leranth, C., Hajszan, T., Szigeti-Buck, K., Bober, J., and MacLusky, N.J. (2008) Bisphenol A prevents the synaptogenic response to estradiol in hippocampus and prefrontal cortex of ovariectomized nonhuman primates. *Proceedings of the National Academy of Sciences (USA)* 105(37):14187-14191.

¹⁰ LaPensee EW, Tuttle TR, Fox SR, Ben-Jonathan N. 2008. Bisphenol A at Low Nanomolar Doses Confers Chemoresistance in Estrogen Receptor Alpha Positive and Negative Breast Cancer Cells. *Environ Health Perspect*: doi:10.1289/ehp.11788. [Online 8 October 2008] <http://ehp.niehs.nih.gov/docs/2008/11788/abstract.html>

¹¹ Dairkee, S.H., Seok, J., Champion, S., Sayeed, A., Mindrinos, M., Xiao, W., Davis, R.W., Goodson, W.H. *Bisphenol A induces a profile of tumor aggressiveness in high-risk cells from breast cancer patients. Cancer Research* 68(7): 2076-2780; Ho SM, Tang WY, Belmonte de Frausto J, Prins GS. 2006. Developmental exposure to estradiol and bisphenol A increases susceptibility to prostate carcinogenesis and epigenetically regulates phosphodiesterase type 4 variant 4. *Cancer Res* 66(11):5624-5632; Maffini, M.V., Rubin, B.S., Sonnenschein, C., and Soto, A.M. “Endocrine disruptors and reproductive health: The case of bisphenol A.” *Molecular and Cellular Endocrinology* 2006, 25:179-186.

¹² Scientific Peer-Review of the FDA Draft Assessment of Bisphenol A for use in Food Contact Applications, Oct. 2008: <http://www.fda.gov/OHRMS/DOCKETS/ac/08/briefing/2008-4386b1-05.pdf> p.7.

The Screening Assessment for BPA commented that the “limited evidence of the association of BPA to neoplastic transformation in the prostate and mammary gland of adult rats is insufficient to demonstrate that early BPA exposure, acting independently, could lead to neoplastic events”. At the same time, the report stated that “further research was needed in the role of early life exposures to BPA, particularly via routes most relevant to human exposure, in the process of carcinogenesis”.¹³

These studies and suggestions for further research provide considerable support to the accumulating evidence that BPA is hazardous to human health and that precautionary measures are needed to prevent exposure to BPA across the population.

Recommendations:

7. Findings from new and emerging studies on BPA need to be reviewed on a continuous basis.
8. The screening assessment needs to be updated and amended accordingly, with ongoing research on BPA.
9. The Proposed Risk Management Approach needs to take into consideration, in a precautionary manner, the implications of new studies.
10. The risk management plan should cover the broader use of BPA in order to minimize and prevent health-related risks.
11. The Government should develop regulations to ensure that products that potentially expose the consumer to BPA are labelled as a potential reproductive and developmental toxicant.
12. Efforts must be made to reduce the levels of residual BPA in products.
13. Eliminate the use of BPA in food and beverage containers that create direct exposures.
14. Given the high levels of BPA found in house dust, there should be a particular emphasis on reducing the use of the chemical in household products that contribute to this accumulation.
15. Although it is unclear what levels of BPA might remain in cosmetics, the substance should be added to the cosmetics “Hot List” to prohibit its use in cosmetic products.
16. Research on the use of polycarbonate water pipes and how they might increase human exposure to BPA should be supported.

C. Release and Use Data on BPA

The National Pollutant Release Inventory (NPRI) is used to track the annual releases and disposal of BPA. However, the NPRI is severely limited in its coverage of BPA. Firstly, the NPRI does not track all industries. Secondly, the reporting criteria for BPA may not necessarily trigger facility reporting. Furthermore, facilities are not required to measure or monitor their emissions. And while facilities that trigger reporting are required to report all releases, including disposal, neither the recipient nor location of off-site disposal sites is identified.

¹³ Screening Assessment, p.59.

In fact, only 6 to 7 facilities in Canada reported releases of BPA for years 2003-7. No releases to water or land were reported, only to air and for disposal. The Screening Assessment acknowledges that “NPRI data are likely to underestimate total Canadian releases of bisphenol A”.¹⁴

Because the NPRI is an annual report of releases of pollutants, it cannot account for incidences such as upsets in operations, shutdowns, or purging of equipment, that could lead to significantly higher emissions at a particular time. These incidences may have the largest immediate impact on local communities.

Use Data on BPA

The information on the use of BPA is based on industry surveys (under section 71 of CEPA 1999). Specific information in the survey is treated as confidential. It is impossible to relate facility-based release data from the NPRI, which is available to the public, with non-specific information from the survey which is not publicly available.

Recommendations

17. The threshold for reporting BPA to the NPRI must be examined and set at an appropriate level to be able to account for at least 90 per cent of releases of BPA to the environment.
18. The methodology of determining BPA releases needs to be standardized. Facilities must be required to conduct measuring and monitoring of releases.
19. Facilities must be required to report the location and recipient of all off-site disposal sites.
20. Additional monitoring tools are needed to assess levels of BPA in water, air, landfill and sewage treatment plants.
21. The public should have access to information on quantities of use of BPA. This information should not be confidential.

D. Exposure Estimates

We believe that the final screening assessment underestimates current levels of exposure to BPA, potentially increasing the risk to all Canadians, but posing a particular risk to the pregnant woman/fetus subpopulation.

The assertion that exposure levels have been underestimated is based on the following:

- a. Additional routes of exposure to BPA, such as recycled office papers, thermal papers used for credit card and cash register receipts, as well as recycled toilet and facial tissue, were not considered in the draft assessment. The amount of BPA in each has not been extensively quantified, but some studies have shown BPA in recycled toilet paper ranging from 3.2–46 mg/kg dry mass¹⁵ and assorted waste paper from 0.093–4.23 mg/kg dry mass. Another study showed the BPA content

¹⁴ Screening Assessment, p. 12.

¹⁵ Gehring, M, Tennhardt, L, Vogel, D, Weltin, D, Bilitewski, B. Recycled paper distinctly contributes to the bisphenol a, nonylphenol ethoxylate, and nonylphenol load of municipal wastewater. Dresden University of Technology, 2003.

of recycled paper towels ranging from 0.55–24.1 mg/kg.¹⁶ Dermal absorption is a factor in BPA absorption and BPA so absorbed would not be subject to the first pass conjugation that occurs with oral ingestion.¹⁷ While exposure from papers may not itself be a significant source of exposure, it would certainly contribute to aggregate exposure. The omission of such data would lead to an underestimation of exposure levels and risk.

- b.** One of the key findings in recent research was not reported in the Screening Assessment, namely, that current circulating levels of BPA in humans cannot be fully explained by current exposure sources: “The consistent finding that BPA is detected in almost all individuals in developed nations implies that humans are exposed to BPA continuously. Because of the rapid metabolic clearance of BPA, and the measurable levels of BPA that have been detected in human blood and urine, Welshons and colleagues have identified two potential issues: 1) *BPA intake may be actually much higher than has been suggested, and/or 2) long-term, daily intake leads to bioaccumulation of BPA*, leading to steady-state levels that are not represented by any of the current models for BPA metabolism based on single, acute administration.”¹⁸

The Screening Assessment itself acknowledges that the confidence in the exposure estimates is only moderate.¹⁹ A precautionary approach would dictate that additional steps be taken.

Recommendations:

- 22.** The government should conduct further investigation to determine all possible sources of exposure and pathways, especially for vulnerable populations. Further study should also be directed at investigating whether blood and urine levels of BPA are the result of higher than estimated exposure or some other mechanism.
- 23.** Sources of exposure, such as transdermal and inhalation, in addition to dietary, require adequate evaluation.
- 24.** The exposure assessment should consider the potential cumulative and interactive effects of non-food contact exposures to BPA.

D (1) BPA and Occupational Exposure

In its human health assessment of BPA, the final screening assessment makes no reference to occupational exposures to BPA, either as a result of direct manufacturing of BPA or use of products, such as epoxy resins, that could expose workers to BPA. The proposed risk management approach notes only one existing occupational risk management regulation, the requirement under the provisions of the Ingredient

¹⁶ Ozaki A, Yamaguchi A, Fujita T, Kuroda K, Endo G. Chemical analysis and genotoxicological safety assessment of paper and paperboard used for food packaging. *Food Chem Toxicol.* 2004;42:1323-37.

¹⁷ Vandenberg LN, Hauser, R, Marcus, M, Olea, N, Welshons, WV. Human exposure to bisphenol-A. Review prepared for the Bisphenol-A conference, Chapel Hill NC 2007.

¹⁸ *ibid.*

¹⁹ Screening Assessment, p. 55.

Disclosure Act that any BPA in excess of one per cent in a product be reported on a Material Safety Data Sheet.

There are few data available on occupational exposures to BPA but one study did show that urinary BPA levels were significantly higher in 42 men exposed occupationally in working with epoxy resins compared to the non-exposed control group.²⁰ What makes occupational exposures a particular concern is that they are compounding identified consumer exposures. Since the aggregate exposure estimate outlined in the final screening assessment is based entirely on potential consumer exposures, it stands to reason that occupational exposures will result in elevated BPA levels — and elevated potential risk as well.

The industrial uses of BPA outlined in the final screening assessment demonstrate that there are numerous areas of potential occupational exposure to BPA including can manufacturing, automotive painting and repair, CD and other polycarbonate fabricating and concrete sealing. Yet there is no exposure data from those areas and while the risk management approach emphasizes the importance of monitoring there is no provision for monitoring of occupational exposures. Similarly, workers in those affected occupations work without any exposure limits, since the American Conference of Governmental Industrial Hygienists, the body whose standard is used by the Canada Labour Code and most provinces, has not developed any limits for BPA.

Recommendations:

25. The Screening Assessment should address occupational exposures to BPA, including industries using BPA, BPA-derived epoxy resins and polycarbonate fabrication that could pose a risk of exposure to BPA.
26. The Proposed Risk Management Approach should include monitoring of occupational exposures in selected workplaces where there is potential for exposure to BPA from polycarbonate manufacturing, for example, or emissions from paints or adhesives that contain BPA. That monitoring should include bio-monitoring of workers to provide an assessment of circulating BPA levels in workers relative to the general population.
27. The Government should consider amendments to the Occupational Health and Safety Regulations under the Canada Labour Code to provide for occupational exposure limits to BPA and encourage provincial workplace safety authorities to adopt them.

E. Persistence and Bioaccumulation

The Screening Assessment found that BPA meets the criteria for persistence in sediment but does not meet these criteria in air, water, and soil. It also found that BPA, based on available information, does not meet the criteria for bioaccumulation as set out in the *Persistence and Bioaccumulation Regulations* of CEPA 1999.

²⁰ Hanaoka T, Nawamura N, Hara K, Tsugane S. Urinary bisphenol A and plasma hormone concentrations in male workers exposed to bisphenol A diglycidyl ether and mixed organic solvents. *Occup Environ Med.* 2002;59:625-8.

However, the assessment acknowledges conflicting evidence on the aerobic biodegradation potential of BPA from field tests, modelling and laboratory studies. The evidence from these studies was combined at differing *weights* as a means of formulating a conclusion on persistence.²¹ The assigning of weights to these different methodologies with contradictory findings and poor data is a subjective and contentious means to arrive at a conclusion.

The Screening Assessment also notes uncertainty about the measured presence and accumulation potential of BPA in biota. BPA is well recognized as acutely toxic to aquatic organisms. Bioaccumulation factors of up to 650 have been determined for lower trophic level aquatic species, suggesting there may be circumstances or conditions under which BPA may accumulate within organisms. It is also possible that bioaccumulation is occurring with the subsequent potential for food chain transfer and secondary poisoning of predator species.²²

The Screening Assessment acknowledges that “an increased database of measured concentrations in Canadian biota, including trophic magnification studies, would provide greater clarity on the potential for accumulation within individual organisms and along food webs.”²³

The conclusion that BPA does not bioaccumulate within organisms or up the food chain in light of the indicated uncertainties and lack of information conflicts with these statements in the assessment report, and with the application of a precautionary approach.

This conclusion is also disturbing as it predicates the path of the risk management approach, that is, rather than subjecting BPA to virtual elimination provisions under CEPA 1999, BPA is to be managed using a “life-cycle approach, to prevent and minimize releases to the environment”.

Recommendation

- 28.** The finding that BPA is neither bioaccumulative nor persistent in air, water and land is questionable and needs to be reviewed, particularly in light of conflicting and obscure methods used in coming to this conclusion

F. Lack of Protection for the Environment

The final screening assessment found significant evidence for harm to the environment and biological diversity at present levels of environmental BPA release. The evidence is summarized in the Screening Assessment as follows:

Bisphenol A is acutely toxic to aquatic organisms and has been shown to adversely affect growth and development in both aquatic and terrestrial species. There is evidence that low-level exposure to bisphenol A, particularly at sensitive life cycle stages, may lead to permanent alterations in hormonal, developmental or reproductive capacity. In laboratory testing, these effects have occurred within

²¹ Screening Assessment, pp.14-15

²² *ibid.*, p. 34

²³ *ibid.*

the range of concentrations measured in Canada, indicating that there is potential for adverse effects in populations, particularly close to point sources. On the basis of expected continued or increasing exposure of biota, and information indicating the potential for long-term adverse effects to organisms within the range of concentrations currently measured in the environment, it is considered appropriate to apply a precautionary approach when characterizing risk. As such, it is concluded that bisphenol A is entering the environment in a quantity or concentration or under conditions that have or may have an immediate or long-term harmful effect on the environment or its biological diversity.²⁴

It is disappointing in the extreme that the Proposed Risk Management Approach is almost entirely lacking in measures to protect the environment and its biological diversity. As noted above, measures designed to broadly reduce use and release, including substitution with safer materials, are lacking in firm commitment and detail, and are years from being implemented, if they ever will be.

The discussion of landfills is illustrative of the weak approach to environmental protection in the Proposed Risk Management document. Significant reductions in the use of BPA would obviate the necessity to engage provinces in lengthy discussions about how they might reduce levels in landfill leachate.

Recommendations

- 29.** Risk management of BPA should involve a firm commitment with timelines for a broad reduction of BPA use and release, including substitution with safer materials.
- 30.** The development of standards and regulations to control at-source releases of BPA and to implement best-practices management in facilities where BPA is used should be expedited.
- 31.** Research on Pacific salmon, Atlantic cod and other species potentially affected by BPA from wastewater treatment plants should be conducted to determine toxic effects and threshold levels, if they exist.
- 32.** Annual monitoring of effluent from treatment plants, with priority given to primary treatment plants, must be maintained.
- 33.** Compliance with applicable legislation, especially the Fisheries Act, must be ensured.

G. Application of Precautionary Principle

In light of the results of the screening assessment of BPA, the fact that BPA is a known endocrine disruptor, which is active at extremely low concentrations, and recent research that points toward harmful effects of BPA on adult humans, we conclude that the actions being proposed to manage the risks of BPA are almost entirely lacking in precaution. It may be true that no conclusive evidence exists to quantify the harmful effects of this ubiquitous, toxic substance, but enough evidence has accumulated to justify a much broader precautionary approach to preventing harm to the environment and human health.

²⁴Screening Assessment, pp. i-ii.

An approach that fails to identify specific regulations with timelines to protect human health and the environment is not precautionary.

Recommendations

- 34.** In light of the serious potential harm to the environment and human health from BPA, a precautionary approach that involves a commitment to specific regulations with timelines should be taken with respect to all potential harms, including harm to human health and the environment and its biodiversity.
- 35.** The clear objective of the risk management approach should be to reduce exposure to BPA across the population wherever possible and to eliminate sources of that exposure where sensitive subpopulations are involved, regardless of whether BPA meets the criteria for virtual elimination under CEPA 1999.

H. Substitution/Alternatives

The Proposed Risk Management document has taken a weak and passive approach to the issue of finding non-toxic alternatives to BPA in food packaging and other uses. The excuse given is that “no information on potential substitutes for bisphenol A was brought forward in the voluntary Challenge Questionnaire submissions.”²⁵ Surely a basic requirement of preparing a risk management approach is a literature search on alternatives to toxic chemicals. The Government is taking an approach that is not protective of human health by relying on industry to come forward with potential substitutes, and even then, only for infant formula can coatings: “The Government will support manufacturers in the evaluation of replacement options for bisphenol A in infant formula can coatings.”²⁶

A stronger approach would involve supporting research leading to innovative solutions that would benefit the environment, human health, and the economy.

Recommendations

- 36.** The government should actively engage industry, researchers, and stakeholders in developing and/or investigating alternatives to epoxy resins and other products containing BPA.
- 37.** The government should develop a regulatory framework to phase out the use of BPA-based epoxy resin can linings. That framework, which should have as its first objective a reduction in, and eventual elimination of BPA-based can linings for infant formula and food, should set timelines for reduction and eventually elimination of BPA from can linings.
- 38.** Toxicity testing of alternatives must be an important part of the regulatory framework.

²⁵ Proposed Risk Management Approach, p. 11.

²⁶ *ibid.*, p. 11.

I. Socio-Economic Considerations

Section 7.3 of the Proposed Risk Management Approach is weakened by its exclusive attention to economic considerations from a narrow industry viewpoint. The social impacts of the proposed regulations, including the failure of the proposed regulations to provide protection for human health beyond bottle-fed infants, are completely overlooked. Discussion of potential impacts of the proposed weak regulations on health and safety, security, the environment, and the social well-being of Canadians is missing altogether.

The economic analysis included in Section 7.3 is woefully inadequate. It has been pointed out that

The economic costs of current levels of chemical contamination are often hidden, though they contribute significantly to reduced worker productivity, increased hospital costs, more expensive health insurance, and greater burdens on businesses for hazardous waste storage, disposal, and clean-up fees. Uncounted in the conventional cost-benefit analysis of our chemical regulatory policies is the price we pay for children with developmental disabilities or the toll on families with chemical exposure-linked illness, not to mention eco-system impacts.²⁷

Also missing from this section is any reference to researching innovative alternatives to current BPA use and technology, which have the potential to improve the economy as well as the health of humans and the environment.

Recommendation

- 39.** A broader perspective should be taken to the social and economic impacts of regulating BPA, including impacts on the social well-being of Canadians and a more comprehensive approach to economic impacts, including the costs of failing to regulate adequately and the potential economic benefits of researching alternatives to BPA use.

Conclusion

More studies and research will no doubt continue on BPA, and further uncertainties and controversies are bound to surface. However, after decades of using this substance, we know well enough that it is extremely dangerous for the human population as a whole, especially vulnerable subpopulations, and the environment and its biodiversity.

In banning baby bottles containing BPA, Canada is the first country to bring in measures to control exposure to BPA. We urge the Government to go further and take a strong precautionary risk management approach toward the elimination of the use of BPA as the ultimate means of protecting human health and the environment.

²⁷ Letter of Principles for Toxic Chemical Regulatory Reform, *Rachel's Precaution Reporter* #172, Dec. 10, 2008. <http://www.rachel.org>.