



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

# **Final Cost-Benefit and Least Burdensome Alternative Analyses**

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*Chapter 173-334 WAC*

*Children's Safe Products - Reporting Rule*

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**Final Cost-Benefit and  
Least Burdensome Alternative Analyses**  
**Chapter 173-334 WAC**  
**Children's Safe Products - Reporting Rule**

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for the

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# Executive Summary

The Department of Ecology (Ecology) is amending Chapter 173-334 WAC; Children’s Safe Products - Reporting Rule (CSP-RR). The Administrative Procedures Act (APA); RCW 34.05.328(1)(d)(e)) requires two types of analyses before adopting a significant legislative rule – a cost-benefit analysis and a least burdensome alternative analysis. This report provides the results of these analyses and shows the potential impacts associated with the adopted rule. The rule amendments will:

- Add the chemical Tris(1,3-dichloro-2-propyl)phosphate (TDCPP, CAS# 13674-87-8) to the reporting list of chemicals of high concern to children (CHCC list).
- Establish that the first reports required to include TDCPP are those filed after August 31<sup>st</sup>, 2014, according to the phase-in schedule in WAC 173-334-110(2).
- Remove the chemical n Butanol (CAS# 71-36-3) from the CHCC list.

These are the only changes to the CSP-RR. Ecology analyzed the ranges of quantifiable impacts, and where they were unable to estimate quantifiable impacts, considered likely qualitative impacts, relative to the baseline. The APA requires Ecology to consider both qualitative and quantifiable impacts in its analysis. Ecology’s analysis is based on the best available information at the time of this analysis.

Table 1 shows the expected costs and benefits to the people of the State of Washington over 20 years, discounted at an annual rate of 1.45 percent.<sup>1</sup>

Table 1: Expected costs and benefits over 20 years

<b>Costs over 20 years</b>	<b>Benefits over 20 years</b>
<p>Additional testing of TDCPP: \$10,835 - \$630,660.</p> <p>Forgone benefits from reporting of n Butanol, including:</p> <ul style="list-style-type: none"> <li>• Economies of scale in manufacturing</li> <li>• Greater understanding of the distribution of n Butanol in Washington’s children’s products and economy</li> <li>• Credibility and consumer behavior.</li> <li>• Avoided impacts to children’s health.</li> <li>• Recall or litigation costs.</li> </ul>	<p>Forgone testing of n Butanol: \$65,011 - \$1,073,865.</p> <p>Informational benefits from reporting of TDCPP, including:</p> <ul style="list-style-type: none"> <li>• Economies of scale in manufacturing</li> <li>• Greater understanding of the distribution of TDCPP in Washington’s children’s products and economy</li> <li>• Credibility and consumer behavior.</li> <li>• Avoided impacts to children’s health.</li> <li>• Recall or litigation costs.</li> </ul>

<sup>1</sup> Ecology uses a discount rate based on interest that could be earned risk-free on today’s dollars over the relevant time period. Ecology uses the ten-year average rate of return offered on the US Treasury’s T-Bills (inflation-indexed short-term bonds; US Treasury Department, 2013) as the discount rate, averaging 1.45 percent over the last ten years.

# Chapter 1: Background and Scope

Ecology first adopted the rule called the Children's Safe Products - Reporting Rule (CSP-RR) in July 2011, as a result of the Children's Safe Products Act (CSPA; Chapter 70.240 RCW) passed in 2008. This law specifically allows Ecology to "adopt rules as necessary for the purpose of implementing, administering, and enforcing" Chapter 70.240 RCW.

Ecology created a Chemicals of High Concern for Children (CHCC) list in 2009 to meet these requirements. Ecology selected chemicals to be placed on the CHCC list that met both the following criteria:

- Toxicity and exposure criteria as determined by the Washington State Department of Health.
- Criteria for prioritization based on specific governmental authoritative sources.

Taking a conservative approach, even if a chemical met the toxicity and exposure criteria, Ecology decided to prioritize the list of potential CHCCs to a manageable number of chemicals. Ecology contracted with Dr. Catherine Karr (University of Washington Pediatric Environmental Health Specialty Unit) to provide scientific and technical advice regarding the development of the process for prioritizing CHCCs. Dr. Karr developed a framework that allowed us to quickly assess and prioritize chemicals. This framework considered both toxicity and potential for exposure. Ecology used this framework to rank the chemicals.

## TDCPP

The CSPA requires Ecology to identify high priority chemicals that are of high concern for children. When creating the CHCC list in 2009, Ecology considered and researched thousands of chemicals, including TDCPP. This rule making is in response to new information associated with petitions to Ecology. If Ecology had this new information when it originally created the reporting list of chemicals, TDCPP would have been included. Additionally the Washington State Department of Health determined that TDCPP meets both the criteria for exposure and toxicity as defined in RCW 70.240.030(1) and RCW 70.240.010(6) respectively.

TDCPP is a flame retardant used mostly in flexible polyurethane foam, found in upholstered furniture and automotive products such as seat cushions and headrests. This includes foam baby products such as car seats and changing table pads. TDCPP has also been detected in dust and air samples of indoor environments such as homes and day care centers, and in human adipose tissue and the lipids of human milk.

There is scientific evidence showing TDCPP has a potential impact to children's health, and the chemical was eliminated for use in children's pajamas in the 1970s. TDCPP is associated with increased incidence of cancer, nervous system harm, and hormone disruption. Ecology also notes that risk is a function of the level of exposure. The presence of a chemical in a children's product does not necessarily mean that the product is harmful to human health or that there is any violation of existing safety standards or laws.

## n Butanol

This rule making is in response to new information associated with petitions to Ecology. If Ecology had this new information when it originally created the reporting list of chemicals, n Butanol would not have been included.

The chemical n Butanol is commonly used as a solvent; for example in dyes, printing inks, and nail polish. It is also seen as a dehydrating agent in perfumes, or a softener for fabrication of cellulose nitrate plastics.<sup>2</sup> As a result, the chemical n Butanol has been detected in children's toys, paints, nail products, and markers.<sup>3</sup>

One of the sources Ecology used when constructing the CHCC list in 2009 was Reprotex. Reprotex recently updated their toxicity rating for n Butanol to a lower level than it had been in 2009. While n Butanol still meets the toxicity and exposure criteria as determined by the Washington State Department of Health, it is no longer a prioritized chemical of concern due to the updated toxicity rating found in Reprotex, one of the sources Ecology used to determine prioritization. Ecology was provided with this new information, and consequently added the removal of n Butanol to this rulemaking.

These rule amendments contain three changes:

- To add the chemical Tris(1,3-dichloro-2-propyl)phosphate (TDCPP) to the CHCC list,
- Establish that the first reports required to include TDCPP are those filed after August 31<sup>st</sup>, 2014, according to the phase-in schedule in WAC 173-334-110(2).
- To remove the chemical n Butanol from the CHCC list and therefore remove it from the reporting requirements.

Ecology's analysis is based on the best available information at the time of this analysis.

## Scope of Analysis

Ecology analyzed the impacts of the rule amendments in the following sections of this document:

- **Chapter 2: Baseline and Exemptions**  
This chapter explains the baseline concepts to which Ecology's rule amendments were compared in Ecology's analysis, as well as what was not analyzed, and how rule impacts were analyzed.
- **Chapter 3: Costs of the Adopted Rule**  
This chapter explains the cost of the rule amendments.
- **Chapter 4: Benefits of the Adopted Rule**  
This chapter explains the benefits of the rule amendments.
- **Chapter 5: Conclusions**  
This chapter summarizes Ecology's results and includes comments on the analysis.
- **Chapter 6: Least Burdensome Alternative Analysis**

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<sup>2</sup> U.S. EPA, Office of Prevention, Pesticides, and Toxic Substances. Inert reassessment for n-butanol and isobutyl alcohol. 2005.

<sup>3</sup> National Institutes of Health, National Library of Medicine, Household Products Database.

This chapter explains Ecology's determination on whether the rule places the least burden possible on those required to comply with the rule, while fulfilling the goals and objectives of the authorizing statute.

## Chapter 2: Baseline and Exemptions

Ecology describes the baseline to which the rule amendments are compared. The baseline is the regulatory context in the absence of the amendments being adopted.

The Children's Safe Products Act (CSPA) is a law comprised mostly of specific requirements for manufacturers and importers of children's products, including:

- Notification to Ecology that a children's product contains an intentionally added chemical on the CHCC list.
- Notification to Ecology that a children's product is contaminated with a [not intentionally added] high priority chemical of high concern for children at a level exceeding 100 parts per million (ppm) unless the manufacturer determines that the presence of any CHCC has been minimized through use of an appropriate due diligence program.
- Actions that must be taken by – and penalties for – manufacturers or importers in violation of the law.

CSP-RR, in Chapter 173-334 WAC contains the list of chemicals that are considered a priority because they are of high concern for children. Many reporting requirements, definitions, civil penalties, and notification requirements are explicitly defined in the CSPA law, as explained below.

The baseline for comparison is the current CSP-RR, the CSPA law, as well as a number of partially overlapping requirements and mitigating factors, including:

- The Federal Consumer Product Safety Improvement Act of 2008 (CPSIA).
- Interstate toxics rules allowing manufacturers to employ economies of scale in producing a homogenous product across multiple markets.

## Changes under Ecology's rule amendments

These adopted rule amendments contain three changes:

- To add the chemical Tris(1,3-dichloro-2-propyl)phosphate (TDCPP) to the CHCC list,
- Establish that the first reports required to include TDCPP are those filed after August 31<sup>st</sup>, 2014, according to the phase-in schedule in WAC 173-334-110(2).
- To remove the chemical n Butanol from the CHCC list and therefore remove it from the reporting requirements.

These are the only three changes addressed in this analysis. Changes Ecology does not have discretion over are not analyzed. Requirements not being amended, that already exist in the current CSP-RR (such as all other chemicals on the CHCC list, reporting ranges, etc.) are also not analyzed, as they are a part of the baseline. In the absence of these adopted amendments, parties will need to comply with the existing CSP-RR. The effect of these rule amendments is that to the extent necessary:

- Manufacturers or importers may report on the presence of TDCPP, which may result in additional testing for TDCPP.
- Manufacturers or importers that may have tested for n Butanol will no longer need to because they will no longer need to report on the presence of n Butanol.

## Analytical exemptions

We also note that certain relevant elements have already been explicitly dictated or defined in the existing CSPA law, including:

- Definitions for:
  - Children's product.
  - High priority chemical.
  - Manufacturer.
  - Toy.
  - Trade association.
- Explicit reporting requirements including:
  - The name of the chemical used or produced and its chemical abstracts service registry number.
  - A brief description of the product or the product component containing the substance.
  - A description of the function of the chemical in the product.
  - The amount of the chemical used in each unit of the product or product component. The amount may be reported in ranges, rather than the exact amount.
  - The name and address of the manufacturer and the name, address, email, and phone number of a contact person for the manufacturer.
  - Any other information the manufacturer deems relevant to the appropriate use of the product.
- Civil Penalty.

For this rulemaking, Ecology only has discretion on the phasing-in of first reporting time (Ecology is not changing reporting ranges in these rule amendments). The inclusion of TDCPP on the reporting list meets the standards set by the authorizing law. If Ecology is petitioned to add a chemical to, or remove a chemical from the list, and the chemical meets the requirements, Ecology must consider entering into rulemaking to include it.

## Chapter 3: Costs of Ecology's Adopted Rule

Ecology quantitatively assessed the likely costs of the adopted rule, and developed appropriate quantitative estimates of the value of those costs for which it was possible. Ecology expects the elements of the adopted rule over which Ecology had discretion to result in costs related to:

- The timing of first reporting.
- Additional expected testing of TDCPP.
- Forgone benefits resulting from non-reporting of n Butanol.

## **Phase-in reporting**

The authorizing law allows Ecology to phase in first reporting, but it does not explicitly dictate the degree of phasing. Ecology's choice of the degree of phasing in the reporting schedule only acts to mitigate the costs of reporting on the initial date specified in the law (parties do not need to begin reporting until August of 2014). Ecology, therefore, does not believe the choice of longer times before first reporting will impose additional costs.

## **Quantified costs of Ecology's adopted rule**

Ecology estimated the quantitative costs of complying with the adopted rule, including those elements dictated by the authorizing law, based on:

- The number of businesses expected to comply.
- The estimated costs of testing or business practices and reporting.

## **Costs of testing for TDCPP**

There is a high degree of uncertainty inherent in this estimation given the purpose of the rule amendments – to learn the presence of the chemicals on the CHCC list in children's products. If Ecology already had this knowledge there would be no need for the amendments to the reporting rule. Ecology would already have the information the amendments to the reporting rule seek to provide. Ecology's analysis is based on the best available information at the time of this analysis.

Ecology also notes that testing is not specifically required by the adopted rule or the CSPA. Other means of estimating TDCPP content include supply-chain knowledge and knowledge of the manufacturing process.

These estimates also do not account for economies of scale, non-reporters, or interstate/international regulatory consistency. For example, TDCPP was recently added to California's Proposition 65 list, which requires labeling of products that contain chemicals on the list at the risk of facing civil lawsuits if labeling is not done. Because California is a relatively larger market than Washington State, to some extent we expect companies may already test for TDCPP to meet the reporting requirements of Proposition 65.

Some retailers who act as importers or distributors for products made by companies with no presence in the United States may also need to report, but Ecology assumed the number of importing companies will be minimal. Costs also depend on the extent of process knowledge businesses have. Responsible businesses will have some (if not complete) control or knowledge of the manufacturing process and content of their children's products. This is achieved through direct control or contracting. Ecology also expects that some businesses will already have process knowledge to mitigate liability in the event of product recall.

Ecology uses a few different estimates to provide a range of possible costs, particularly given the uncertainty outlined above.

## **Estimates based on existing reporting**

We note that from 6/1/2012 to 4/8/2013, there have been eight reports of four different chemicals whose function was listed as flame retardants (these are the only chemicals with the function flame retardant reported since the adoption of the CSPA-RR). Based on this data it appears a

single chemical averages two reports in approximately one year. We also note however that not all businesses are required to report certain chemicals on the CHCC list yet (as a function of business size and product tier), as reporting requirements are being phased in at the time of this publication. As businesses are phased in we might expect a greater number of reports in the future. As a result, we counterbalance this low estimate with a high estimate illustrated below. We note that reports do not necessarily imply testing, and we control for this distinction below.

Table 2: Chemicals with flame retardant as a function reported to Ecology from 6/1/12 to 4/8/13

Chemical	Number of reports
2,2'3,3'4,4'5,5'6,6'-Decabromodiphenyl ether; BED-209 (CAS# 1163-19-5)	1
Antimony & Antimony compounds (CAS# 7440-36-0)	2
Di-n-octyl phthalate (DnOP, CAS# 117-84-0)	1
Tetrabromobisphenol A (CAS# 74-94-7)	4

Under the existing rule parties do not need to report based on an individual product, but rather by product category (specifically by “brick” levels of the GS1 Global Product Classification standard). Children’s products containing TDCPP will likely fall in segment codes 75000000 or 54000000; baby care and household/office furniture/furnishings respectively.

From the Washington State Employment Security Department we find all employers in Washington State with North American Industry Classification System (NAICS) codes that correspond with GS1 brick 75000000 or 54000000:

- 337121 Upholstered Household Furniture Manufacturing.
- 337122 Nonupholstered Wood Household Furniture Manufacturing.
- 337124 Metal Household Furniture Manufacturing.
- 337125 Household Furniture (except Wood and Metal) Manufacturing.

These codes were chosen because they include ottomans, upholstered juvenile furniture, cots, cribs, high chairs, dressing tables, nursery furniture, playpens, and car seats. For example, NAICS code “337122 Nonupholstered Wood Household Furniture Manufacturing” includes high chairs, dressing tables, and playpens. TDCPP is a flame retardant used mostly in flexible polyurethane foam, found in upholstered furniture and automotive products such as seat cushions and headrests. This includes foam baby products such as car seats and changing table pads. These codes also likely include businesses not expected to be affected by the rule amendments, as the codes also include bookcases, cabinets, bed frames, and sofas, for example, which are not children’s products and not product categories that need to be reported. Further stratification is not possible with the NAICS codes.

There are 84 businesses for the NAICS codes identified above.<sup>4</sup> In a given year, some businesses may need to report in more than one product category, and some businesses may not need to

<sup>4</sup> We note in the previous cost-benefit analysis Ecology identified 276 potential businesses. We recall that those businesses potentially had to comply with reporting of 66 different chemicals, which appeared in a variety of products. TDCPP is primarily found in polyurethane foam, and is unlikely to appear in burial caskets, silverware, children’s pajamas, or shampoos. Our selection of NAICS codes reflects this distinction.

report any (for example if they've already reported in previous years). We note that there were 59 businesses total that reported any one of 66 chemicals between 6/1/12 to 4/8/13. A given chemical had 7.89 businesses report, on average, and we assume that in a given year 13.4 percent of businesses will need to report for a single given chemical.

Given a business needed to report for a chemical, a business averaged 9.038 reports per chemical. Our universe of total businesses, multiplied by the expected percentage of businesses that will report for a single chemical, multiplied by the average reports per chemical for a business, gives us the expected number of reports for a single chemical. This is our medium estimate. We note that reports do not necessarily imply testing, and we control for this distinction below.

Our high estimate is derived from the average number of reports for a given chemical from 6/1/12 to 4/8/13, and there were 116.41 reports on average for a single chemical. We note that reports do not necessarily imply testing, and we control for this distinction below.

We note that there may be minimal time costs associated with reporting separate from the testing. We have omitted them here because Ecology believes them to be negligible, and consists of using a web form with drop-down fields to report information on product brick, component, chemical, concentration, and the chemical function. Ecology does not believe this will take more than a few seconds.

**No businesses are required to test for any of the chemicals, but some may elect to test for TDCPP**

For businesses currently required to report, we assume 62.8 percent of these businesses will need to test their products. We derive this estimate from historical reporting data that identified the presence of a CHCC in a product as “no function - contaminant”, across all reported products. Ecology’s assumption is that reports that are able to identify the use of a chemical imply the chemical was used as part of the product design, and businesses are likely to know of the chemical in the product without testing (as it is designed to be there). If a business already knows the product contains TDCPP (for example because they have knowledge of the manufacturing process or already tested for compliance with other regulations such as California’s Proposition 65), they will not need to test. For example, a business with many potential products to report may hire a product design engineer to evaluate the product design cycle and identify the likelihood of a CHCC’s presence in the product. Then, if a report was submitted to Ecology it will be submitted without testing any of the products, but instead be based on that engineer’s knowledge of the product design.

We also note that in Ecology’s experience this is likely a high estimate of the percentage of historical reports that incurred testing costs, because even if businesses report a chemical as a “no function - contaminant”, it is possible the chemical is part of the product design. For example, chemicals purposefully used as part of the manufacturing process that no longer serve a use after production may be reported as a “no function - contaminant”. We are unable to discern which products reported as a “no function - contaminant” actually required testing. As a result, we believe the estimated 62.8 percent used above is likely an upper bound, and a smaller percentage of businesses will actually test. We emphasize again that no businesses are required to test for any of the chemicals, and the percentage of businesses that will elect to test for

TDCPP will likely be much smaller, because Ecology believes most businesses know what is in their product.

**Testing costs**

From Ecology’s experience testing for TDCPP we estimate \$500 per sample tested. This does not take into any economies of scale, and Ecology emphasizes that no testing is required. If they already know the product contains TDCPP (for example because they have knowledge of the manufacturing process or already tested the product to comply with other regulations such as California’s Proposition 65), they will not need to test and the compliance costs estimated below will be smaller. If a business has multiple products falling in multiple product categories that might need to be tested, the compliance costs estimated below will be larger. Similarly, businesses only need to report per product category or brick, so if multiple products fall in a single product category they only need to report once.

Table 3: Expected testing costs over 20 years

<b>Year</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
2014	\$619	\$31,423	\$36,030
2015	\$610	\$30,974	\$35,515
2016	\$601	\$30,532	\$35,007
2017	\$593	\$30,095	\$34,507
2018	\$584	\$29,665	\$34,014
2019	\$576	\$29,241	\$33,528
2020	\$568	\$28,823	\$33,049
2021	\$560	\$28,411	\$32,576
2022	\$552	\$28,005	\$32,111
2023	\$544	\$27,605	\$31,652
2024	\$536	\$27,210	\$31,199
2025	\$528	\$26,821	\$30,753
2026	\$521	\$26,438	\$30,314
2027	\$513	\$26,060	\$29,881
2028	\$506	\$25,688	\$29,453
2029	\$499	\$25,321	\$29,032
2030	\$492	\$24,959	\$28,618
2031	\$485	\$24,602	\$28,208
2032	\$478	\$24,250	\$27,805
2033	\$471	\$23,904	\$27,408
<b>20-year total</b>	\$10,835	\$550,028	\$630,660

**Forgone benefits from non-reporting of n Butanol**

The impetus of the CHCC list is the lack of information concerning which chemicals are in which products, and what exposure children currently face. As mentioned above, risk is a function of the level of exposure, and the presence of a chemical in a children’s product does not necessarily mean that the product is harmful to human health or that there is any violation of existing safety standards or laws.

Reporting of chemicals in product categories provides information as to what types of chemicals of high concern to children appear in products, how much exposure children face, and the

concentration of the chemicals in these products. This additional information will also allow Ecology to remove chemicals if it is determined certain chemicals are not a high concern, based on exposure and concentration, or it will inform Ecology that more information is needed.

One of the sources Ecology used when constructing the CHCC list in 2009 was Reprotext, to determine prioritization of chemicals to be included on the list. Reprotext recently updated their information for n Butanol lowering the toxicity rating. As a result, Ecology does not believe n Butanol is a prioritized chemical of concern.

Additional information is important because future policy decisions have consequences. For example, banning a chemical may impose large costs on Washington businesses. Delayed action or inaction may also have deleterious effects on the health of children. Additional information allows for better decisions, and the value of this additional information is forgone when businesses no longer need to report on a chemical, in this case n Butanol. This may be mitigated to a certain extent with n Butanol, however, because danger to children’s health is a function of toxicity, and new information suggests n Butanol may be less toxic than previously thought. Based on this new information Ecology is removing n Butanol from the CHCC list.

We note that removal of n Butanol does not necessarily imply n Butanol is no longer toxic. Ecology expects, based on current information, chemicals with higher relative toxicity ratings have a larger potential impact on children, and greater benefits are derived from gathering additional information on those chemicals. It is important, for protection of children’s health, to compile information about exposure and concentration for chemicals with higher expected toxicity.

## Chapter 4: Benefits of Adopted Rule

Ecology estimated the benefits of the adopted rule, including those elements dictated by the authorizing law, based on:

- The avoided costs to businesses that may have tested for n Butanol, that will no longer need to because they will no longer need to report on the presence of n Butanol.
- Informational benefits from reporting of TDCPP.

### Avoided costs to businesses from removal of n Butanol

There were 12 reports of n Butanol submitted to Ecology from 6/1/12 to 4/8/13. This comprised our low estimate of reports in a given year. We also looked at the number of businesses in Washington State with North American Industry Classification System (NAICS) codes that correspond with the following GS1 brick codes:

Table 4: n Butanol brick codes included in reports from 6/1/12 to 4/8/13

10000671	10001090	10005178	10005187
10001077	10001720	10005180	10005193
10001084	10005177	10005184	10005684

These GS1 brick codes correspond to NAICS codes:

- 325620 Toilet Preparation Manufacturing
- 339910 Jewelry and Silverware Manufacturing
- 339930 Doll, Toy, and Game Manufacturing
- 316210 Footwear Manufacturing

These NAICS codes were chosen because they include nail cosmetic/care products, necklaces, musical toys, shoes, toy vehicles, bracelets, and hobby kits. The chemical n Butanol is commonly used as a solvent; for example in dyes, printing inks, and nail polish. It is also seen as a dehydrating agent in perfumes, or a softener for fabrication of cellulose nitrate plastics.<sup>5</sup>

These codes also likely include businesses not expected to be affected by the rule amendments, as the codes also include dentures, bath salts, golf shoes, and table cutlery, for example, which are not children's products and not product categories that need to be reported. Further stratification is not possible with the NAICS codes.

From the Washington State Employment Security Department there are 164 potential businesses for the NAICS codes identified above.<sup>6</sup> In a given year, some businesses may need to report in more than one product category or some businesses may not need to report any (for example if they've already reported in previous years). We note that there were 59 businesses total that reported any one of 66 chemicals between 6/1/12 to 4/8/13. A given chemical had 7.89 businesses report, on average, and we assume that in a given year 13.4 percent of potential businesses will need to report for a single given chemical.

If a business needed to report for a chemical, a business averaged 9.038 reports per chemical. Our universe of total businesses, multiplied by the expected percentage of businesses that will report for a single chemical, multiplied by the average reports per chemical for a business, gives us the expected number of reports for a single chemical. This is our high estimate for avoided costs.

Our medium estimate is derived from the average number of reports for a given chemical from 6/1/12 to 4/8/13, and there were 116.41 reports on average for a single chemical.

Assuming that 62.8 percent of businesses reporting will need to test their products in order to report, and that each test costs \$500, for the same reasons as explained in the Chapter 4 of this document, we arrive at our expected avoided testing costs over 20 years below.

Table 5: Expected avoided testing costs over 20 years

<b>Year</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
2014	\$3,714	\$36,030	\$61,351
2015	\$3,661	\$35,515	\$60,474

<sup>5</sup> U.S. EPA, Office of Prevention, Pesticides, and Toxic Substances. Inert reassessment for n-butanol and isobutyl alcohol. 2005.

<sup>6</sup> We note in the previous cost-benefit analysis Ecology identified 276 potential businesses. We recall that those businesses potentially had to comply with reporting of 66 different chemicals, which appeared in a variety of products. Our selection of NAICS codes reflects this distinction.

2016	\$3,609	\$35,007	\$59,609
2017	\$3,557	\$34,507	\$58,757
2018	\$3,506	\$34,014	\$57,918
2019	\$3,456	\$33,528	\$57,090
2020	\$3,407	\$33,049	\$56,274
2021	\$3,358	\$32,576	\$55,470
2022	\$3,310	\$32,111	\$54,677
2023	\$3,263	\$31,652	\$53,895
2024	\$3,216	\$31,199	\$53,125
2025	\$3,170	\$30,753	\$52,366
2026	\$3,125	\$30,314	\$51,617
2027	\$3,080	\$29,881	\$50,879
2028	\$3,036	\$29,453	\$50,152
2029	\$2,993	\$29,032	\$49,435
2030	\$2,950	\$28,618	\$48,729
2031	\$2,908	\$28,208	\$48,032
2032	\$2,866	\$27,805	\$47,346
2033	\$2,825	\$27,408	\$46,669
<b>20-year total</b>	<b>\$65,011</b>	<b>\$630,660</b>	<b>\$1,073,865</b>

## Informational benefits from reporting of TDCPP

Ecology expects reporting of TDCPP content will benefit the public through the information provided on potential hazards posed by children's products. Information on TDCPP content may be used for:

- Consumer and government decision-making.
- Reduced health impacts and litigation.
- Industry understanding of TDCPP content across the supply chain.

### Consumer and government decision-making

Improved information provides assistance for planning and implementing future product labeling or TDCPP reduction goals. This information is also specific to products sold in Washington, and may result in reductions in children's exposure to TDCPPs more efficiently and with a greater degree of equity across the local economy. Understanding TDCPP content in products may also create more public confidence in the quality and safety of products in the market place, and the addition of TDCPP to the CHCC list may also assist industry understanding of TDCPP content across the supply chain.

Reporting of products provides information as to what types of products chemicals of high concern to children appear in, how much exposure children face, and the concentration of the chemicals in these products. This additional information allows Ecology to remove chemicals from the CHCC list if it is determined certain chemicals are not a high concern, based on exposure and concentration, or informs Ecology that more information on these chemicals is needed.

California's Office of Environmental Health Hazard Assessment Program has a list of chemicals of high concern that they publish. Recently, CA reviewed the current scientific literature and determined that the evidence was sufficient to include TDCPP on its Proposition 65 list. TDCPP

now receives higher prioritization based on the criteria WA used to list a chemical on the CHCC list. Ecology, based on this new information, is updating the CHCC list to include TDCPP, reflecting TDCPP’s current rating.

Information on TDCPP presence will assist consumers in making more efficient consumption choices relative to their preferences, by reducing uncertainty for consumers in their purchasing decisions.

We looked at the incidence of TDCPP in children’s products found by Stapleton et al. (2011). In a sample of 101 products the authors found 36 incidences of TDCPP, or approximately 36 percent. These products ranged from car seats to nursing pillows, and there were 16 different types of products in all.

Table 6: Incidence of TDCPP in children's products from Stapleton et al. (2011)

<b>Product type</b>	<b>Found</b>	<b>Sample</b>	<b>Proportion</b>
Car seats	11	21	0.52
Changing Table Pads	8	16	0.50
Sleep Positioners	6	15	0.40
Portable Mattresses	3	13	0.23
Nursing Pillows	1	11	0.09
Baby Carriers	1	5	0.20
Rocking Chairs	1	5	0.20
High Chairs	2	4	0.50
Infant Bath Mat/Sling	1	3	0.33
Baby Walkers	2	2	1.00
Stroller	0	1	0.00
Bath Toy	0	1	0.00
Car Seat Pillow	0	1	0.00
Bumbo Chair	0	1	0.00
Nap Mat	0	1	0.00
Toilet Seat	0	1	0.00
	36	101	0.36

To the extent that some consumers will be willing to pay for TDCPP-free children’s products, without the rule amendments consumers may not have the information to identify products that are TDCPP-free. This uncertainty prevents them from selecting an optimal bundle of consumption goods. Under the rule amendments, consumers will be able to choose some quantity of children’s products with TDCPP, some quantity of children’s products without TDCPP, and some number of all other products. With uncertainty, consumers are only able to choose some quantity of all other products, and some quantity of children’s products, with probability 0.36 that they include TDCPP, and with probability 0.64 they do not include TDCPP. Ecology expects that the combination of increased knowledge about TDCPP content in children’s products, and increased confidence in the scope and accuracy of the information will benefit consumers in their ability to behave in line with their full set of preferences. We note that uncertainty will still exist, because the reports only specify product bricks (categories) and not specific products.

## Potential for reduced health impacts and litigation

Ecology also expects the adopted rule, through better manufacturer and importer understanding of product content, to reduce the likelihood of health impacts from children's products containing TDCPP, as well as litigation resulting from potential impacts to children.

There may also be a reduction in likelihood of health impacts and litigation resulting from potential impacts to children. Ecology notes that the presence of a chemical does not establish that there will be harm to a child, and that reporting ranges are not indicative of prospective known harm or liability.

Ecology could not confidently estimate the degree to which children's products containing TDCPP will cause potential impacts to children, and the associated lawsuits that might be expected. Ecology notes however that violations of the adopted rule and the federal CPSIA rule have upper bound civil damages for known violations of:

- \$100 thousand for known violations.
- \$15 million for a related series of violations.

In relative terms, approximately three avoided cases of TDCPP content resulting in recalls, lawsuits, or children's health impacts of a minor degree, over 20 years, will comprise the break-even point compared to the average estimated costs of reporting TCDDP under the adopted rule.

## Chapter 5: Conclusion

Ecology is amending the CHCC list found in the CSP-RR to include TDCPP and to remove n Butanol. Ecology analyzed the impacts of the adopted rule relative to the current CSP-RR, excepting from analysis those elements of the rule that were dictated by law, and over which Ecology did not have discretion.

These rule amendments contain three changes:

- To add the chemical Tris(1,3-dichloro-2-propyl)phosphate (TDCPP) to the CHCC list,
- Establish that the first reports required to include TDCPP are those filed after August 31<sup>st</sup>, 2014, according to the phase-in schedule in WAC 173-334-110(2).
- To remove the chemical n Butanol from the CHCC list and therefore remove it from the reporting requirements.

Ecology analyzed the ranges of quantifiable impacts, as well as many likely qualitative impacts, relative to the baseline. Based on its analysis, Ecology determined there is a reasonable likelihood the benefits of the adopted rule exceed the likely costs, accounting for both quantified and qualitative impacts.

While the quantitative benefits from avoided testing for n Butanol exceed the expected quantitative costs, we also note there are forgone benefits from non-reporting of n Butanol. New information implied n Butanol may be less toxic than previously thought. Simultaneously, new information to Ecology provided support to increase the prioritization of TDCPP and include it on the CHCC list. Ecology expects, based on current information, chemicals with higher relative toxicity ratings have a larger potential impact on children, and greater benefits are derived from

gathering additional information on those chemicals. It is important, for protection of children’s health, to compile information about exposure and concentration for chemicals with higher expected toxicity. As a result, we expect the informational benefits from TDCPP reporting to exceed any forgone benefits from non-reporting of n Butanol, holding all else equal.

Table 5 shows the expected costs and benefits to the people of the State of Washington over 20 years, discounted at an annual rate of 1.45 percent.

Table 7: Expected costs and benefits over 20 years

<b>Costs over 20 years</b>	<b>Benefits over 20 years</b>
Additional testing of TDCPP: \$10,835 - \$630,660.	Forgone testing of n Butanol: \$65,011 - \$1,073,865.
Forgone benefits from reporting of n Butanol, including: <ul style="list-style-type: none"> <li>• Economies of scale in manufacturing</li> <li>• Greater understanding of the distribution of n Butanol in Washington’s children’s products and economy</li> <li>• Credibility and consumer behavior.</li> <li>• Avoided impacts to children’s health.</li> <li>• Recall or litigation costs.</li> </ul>	Informational benefits from reporting of TDCPP, including: <ul style="list-style-type: none"> <li>• Economies of scale in manufacturing</li> <li>• Greater understanding of the distribution of TDCPP in Washington’s children’s products and economy</li> <li>• Credibility and consumer behavior.</li> <li>• Avoided impacts to children’s health.</li> <li>• Recall or litigation costs.</li> </ul>

## Chapter 6: Least Burdensome Alternative Analysis

RCW 34.05.328(1)(e) requires Ecology to “determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection”.

### General goals and specific objectives of the authorizing statutes

Ecology believes the authorizing law bears the general goal of understanding chemical content in children’s products used in Washington State. A specific objective is to inform not only current understanding of the presence of chemicals identified as a high concern to children, but also to adequately inform future government or private sector action on addressing or reducing risks to children’s health.

### Alternative rule content considered

Ecology did not consider significant alternative content. This rulemaking resulted from a petition to add TDCPP to the CHCC list, and new information causing Ecology to remove n Butanol from the CHCC list. Because the Washington State Department of Health determined that TDCPP met the criteria of toxicity and exposure as written in the current CSP-RR, the baseline, Ecology initiated rulemaking to add TDCPP to the CHCC list, as well as adding a date of

compliance. Because Reprotext recently updated their toxicity rating for n Butanol to a lower level than it had been in 2009, it is no longer a prioritized chemical of concern, and Ecology consequently added the removal of n Butanol to this rulemaking.

If Ecology had this new information when it originally created the reporting list of chemicals, n Butanol would not have been on the list, but TDCPP would have been.

Based on the statutory authority created by the law, Ecology could have done the following:

- Required reporting for additional CHCCs much sooner.

Instead, Ecology chose options, within the scope of the authorizing statute, to reduce burden, including:

- Allowing tiered-in reporting, such that businesses do not need to begin reporting products that contain TDCPP until August 2014.
- Allowing multiple options for determining TDCPP content in children's products, rather than requiring only testing. Testing is not required by the law or the rule.

Ecology believes removing n Butanol does not add burden, but only decreases burden for those required to comply with it. There are no other changes to the rule. No other content was considered, at this time, for the purposes of this rulemaking.

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