Notice of Deficiency for Deestone Corporation Public Co. Ltd. Preliminary Alternatives Analysis Report Dated March 29, 2024

The Department of Toxic Substances Control (DTSC) has identified deficiencies in the Preliminary Alternatives Analysis (AA) Report for 6PPD in Motor Vehicle Tires prepared by Surachet P. and submitted by Siritape Promsopa on behalf of Deestone Corporation Company Limited (Deestone).

The submitted Preliminary AA Report is incomplete. The SCP regulations require that Reports must include all of the applicable information specified in sections 69505.7(b)-(k) of Chapter 55 of Title 22 of Division 4.5 of the California Code of Regulations. All required sections must be complete. Please see the summary below regarding the required sections of Preliminary AA Reports.

For your revised Preliminary AA Report, DTSC recommends you use the Preliminary AA Report Template (included as Appendix A). This tool can help ensure that all required sections are included in an organized manner.

Deestone should address the deficiencies and resubmit a revised Preliminary AA Report to DTSC by July 15, 2024.

SUMMARY OF PRELIMINARY AA REPORT CONTENTS REQUIRED BY THE REGULATIONS.

Executive Summary

The Executive Summary must contain sufficient information to convey a general understanding of the scope and results of the Preliminary AA and the basis for selecting the alternatives to be further evaluated in the second stage AA. It must be organized similarly to the Preliminary AA Report and include a summary of each section of the Preliminary AA Report. The Executive Summary provides as much information as possible in a manner that is tailored to those who are not experts in the field.

Preparer Information

Preliminary AA Reports must include the following information in case DTSC needs to contact the responsible entity or its authorized agents:

- The name of, and contact information for, the person submitting the Preliminary AA Report;
- If applicable, the name of, and contact information for, all responsible entities on whose behalf the Preliminary AA Report is being submitted; and
- The names of the parties that were involved in funding, directing, overseeing, preparing, or reviewing the AA.

Responsible Entity and Supply Chain Information

The Preliminary AA Report must contain the following information regarding the responsible entity and the rest of the supply chain for the Priority Product:

- The name, contact information, and headquarters location of the manufacturer and importer, if applicable. If the Preliminary AA Report is prepared on behalf of a consortium of manufacturers or other persons in the product's supply chain, a list of the participants must be provided as well as their corresponding contact information.
- The name of, and contact information for, any persons identified on the Priority Product label as the manufacturer, importer, or distributor.
- The name of, and contact information for, all persons in California, other than the final purchaser or lessee, to whom the manufacturer or importer directly sold the product within the prior twelve (12) months.
- List and location of the manufacturer's and importer's retail sales outlets where the manufacturer or importer sold, supplied, or offered for sale the Priority Product in California, if applicable.

If any of the supply chain information is trade secret, the responsible entity may assert a claim for trade secret protection when submitting the information to DTSC.

Priority Product Information

The Preliminary AA Report must include information that identifies and distinguishes tires manufactured by Deestone. from other similar products. The Preliminary AA Report must describe the role and legal requirements of tires, as well as the function of 6PPD in tires.

- The brand names(s) and product names(s)
- The Chemical(s) of Concern for the Priority Product
- Material Safety Data Sheets or Safety Data Sheets Related to the Priority Product

Scope of Relevant Comparison Factors

The Preliminary AA Report must include the factors, and the associated exposure pathways and life cycle segments, determined to be relevant for evaluation and comparison of the Priority Product and

its alternatives. The Preliminary AA Report must also explain the rationale for determining that a factor is not relevant and include supporting information for this determination.

At a minimum, the Preliminary AA Report must include a discussion of relevant factors identified in the Product-Chemical Profile for Motor Vehicle Tires Containing 6PPD.

Relevant Factors	Examples	Possible sources of information
Adverse environmental impacts	Ecotoxicity	• European Chemicals Agency[1], • Washington State's GreenScreen Summaries for 6PPD Alternatives[2], and • U.S. Environmental Protection Agency's Hazard Comparison Dashboard[3] (part of the CompTox Tools Cheminformatics modules). Note that the Hazard Comparison Dashboard aggregates data from multiple sources, and the responsible entity should cite the primary source rather than the assigned hazard score.
Adverse public health impacts	Human toxicity	
Physicochemical properties	• Henry's Law constant • Organic carbon partition coefficient (Koc)	• European Chemicals Agency[1], and • U.S. Environmental Protection Agency's CompTox Chemicals Dashboard[4].
Environmental fate	• Bioconcentration factor (BCF) • Abiotic and biotic degradation	
Potential exposures to 6PPD and alternatives during the product's life cycle	• Manufacture • Use • Waste generation and management • Reuse and recycling • End-of-life disposal	

[1] https://echa.europa.eu/information-on-chemicals
[2] https://www.ezview.wa.gov/site/alias__1962/37732/research_and_proposed_alternatives_to_6ppd.aspx
[3] https://www.epa.gov/comptox-tools/cheminformatics
[4] https://comptox.epa.gov/dashboard/

Chapter 3 of DTSC's Alternatives Analysis Guide[5] provides guidance on Relevant Factors that may be helpful to review.

Scope and Initial Comparison of Alternatives

The Preliminary AA Report must identify and describe the alternatives chosen to be evaluated and compared, and explain the rationale for selecting and screening out specific alternatives.

A Preliminary AA Report must include the information collected and the comparison conducted for the Chemical(s) of Concern and the alternative replacement chemical(s). The Preliminary AA Report must look at the relevant adverse impacts and their associated relevant exposure pathways and lifecycle segments for the Chemical of Concern and each alternative chemical being considered. This must include a matrix, or other summary format, that provides a clear visual comparison summarizing the information.

At a minimum, the responsible entity must consider the following potential alternatives identified on DTSC's website and explain the rationale for screening out specific alternatives. Note that the website specifically calls out the *Potential Alternatives* section in the 6PPD Priority Product Profile[6]. Collectively, this list includes:

1. **Other para-Phenylenediamine (PPD) Derivatives:** 7PPD (CAS 3081-01-4), IPPD (CAS 101-72-4), CPPD (CAS 101-87-1), DPPD (CAS 74-31-7), and CCPD (CAS 4175-38-6).
2. **Non-PPD Alternatives:** Triazine such as TADPT (CAS 121246-28-4, also known as Durazone 37); graphene such as Prophene; 6QDI (CAS 52870-46-9); TMQ (CAS 26780-96-1); and lignin.
3. **Classes of Antidegradants**: Hindered phenols, for example, butylated hydroxytoluene (BHT, CAS 128-37-0); hydroquinones such as Santovar A (CAS 79-74-3); phosphites such as Irgafos (CAS 31570-04-4).
4. **Physical Barriers and Coatings**: Such as waxes and other coatings, see Ace Labs**.**
5. **Alternative Materials for Tires:** Such as ethylene propylene diene (EPDM) and halobutyl rubbers**.**
6. **Emerging Technologies:** Techniques capturing tire wear particles.
7. Other Potential Alternatives listed on DTSC's website: https://dtsc.ca.gov/scp/motor_vehicle_tires_containing_6ppd/

Please provide the rationale and supporting information for selecting Durazone 37™ as the alternative. Any available information on the chemical formula, CAS, molecular weight, etc. must be included in the Preliminary AA Report. If this information is trade secret, Deestone may assert a trade secret claim when submitting the information to DTSC.

[5] https://dtsc.ca.gov/wp-content/uploads/sites/31/2023/06/AA-Guide-Version-1-1_July-2020-Accessible.pdf
[6] https://dtsc.ca.gov/wp-content/uploads/sites/31/2022/05/6PPD-in-Tires-Priority-Product-Profile_FINAL-VERSION_accessible.pdf

Methodology

The Preliminary AA Report must identify and describe the analytical tools, models, and software used to conduct the AA and discuss any of their limitations. The Preliminary AA Report must also identify any published methodologies or guidelines used, and any deviations from those methodologies or guidelines.

Supporting Information

The responsible entity must **cite all information** used as supporting information to perform the Preliminary AA and in preparation of the Preliminary AA Report. The Preliminary AA Report must include a summary of the information reviewed and considered.

Selected Alternatives

The Preliminary AA Report must identify and describe the alternatives selected for further evaluation in the second stage of the AA and **explain the rationale for the selection decision**.

Work Plan and Implementation

The responsible entity must specify the proposed submission date for the Final AA Report and include a work plan for the second stage AA effort.

In the Work Plan Implementation section, please outline the work that Deestone is conducting in collaboration with the National Metal and Materials Technology Center. The Report mentions that reducing 6PPD by using Durazone 37™ is a short-term solution. Please provide more details on the timeline of this change.

Appendix A: Preliminary Alternatives Analysis Report Template

Version 1.2 (June 2020)

INSTRUCTIONS

This Preliminary Alternatives Analysis (PAA) Report template is designed to assist responsible entities in organizing and presenting their PAA Report. Before using this template and for detailed guidance on how to prepare a PAA Report, it is important to review the Safer Consumer Products (SCP) regulations and the latest version of the Alternatives Analysis (AA) Guide. The first stage of the AA shall be completed in accordance with the California Code of Regulations, title 22, section 69505.5, and a PAA Report shall be submitted that complies with Sections 69505.1(b)(2)(A) and 69505.7.

Responsible entities may use this template to prepare their PAA Report or any format of their choice. In the PAA Report, identify and describe the analytical tools, models, and software used to conduct the AA and discuss their limitations. Identify any published methodologies or guidelines used, and any deviations from those methodologies or guidelines.[7] All information used as supporting information in performance of the AA and preparation of the AA Report must be cited and made available to the Department upon request. Include a summary of the information reviewed and considered under Section 69505.1(d).[8] Page numbers and a table of contents should also be included for ease of reference. Except as provided in Section 69505.1 (b)(2)(C), the due date for the PAA Report is 180 days after the date the product is listed on the final Priority Products list, unless the Department specifies a different due date in the Priority Products list.

Once the PAA Report is completed, it can be submitted by PDF through the CalSAFER website. The PAA Report will be made publicly available and published on the CalSAFER website. If the PAA report contains information claimed to be a trade secret, a separate publicly available PAA report shall be submitted to the Department that excludes claimed trade secret information only to the extent necessary to protect its confidential nature.[9] The responsible entity will also need to submit a claim of trade secret protection per Section 69509.

[7] Cal. Code Regs., tit. 22, § 69505.7(h)
[8] Cal. Code Regs., tit. 22, § 69505.7(i)
[9] Cal. Code Regs., tit. 22, § 69505.7(a)(4)(A)

LEGAL NOTE

This template is not a standard or regulation and it creates no new legal obligation. The template is advisory in nature, informational in content, and is intended to assist responsible entities who are preparing Alternatives Analysis reports. This template does not alter or determine compliance responsibilities set forth in statutory and regulatory requirements.

[Title Page:]

Preliminary Alternatives Analysis Report

[Chemical(s) of Concern] found in [Priority Product]

Prepared by:

[Responsible Entity name or Consortium name]

Date: [insert date]

TABLE OF CONTENTS

TABLES

[Insert a list of tables and corresponding page numbers.]

FIGURES

[Insert a list of figures and corresponding page numbers.]

ACRONYMS AND ABBREVIATIONS

[Insert a list of acronyms/abbreviations and definitions.]

EXECUTIVE SUMMARY

[Include a publicly available executive summary sufficient to convey a general understanding of the scope and results of the First Stage AA and the rationale for selecting those alternatives to be further evaluated in the Second Stage AA. The summary must be organized in conformance with the organization of the AA Report and must include a detailed summary of the information presented for each section of the AA Report. Information for which trade secret protection is claimed must not be included in the executive summary.[10]]

[10] Cal. Code Regs., tit. 22, § 69505.7(b)

1.0 PREPARER INFORMATION

[Include the following in this section:

- The name and contact information of the person submitting the AA Report;
- If applicable, the name and contact information of all responsible entities on whose behalf the AA Report is being submitted; and
- The names of the parties that were involved in funding, directing, overseeing, preparing, and/or reviewing the AA.[11]]

Preparer Information:

First Name	
Last Name	
Job Title	
Company	
Email	
Phone	
Address	

Responsible Entities Information:

First Name	
Last Name	
Company	
Business Type	[Assembler, Importer, Manufacturer, Retailer, etc.]
Email	
Phone	
Website	
Address	

[11] Cal. Code Regs., tit. 22, § 69505.7(c)

Headquarters of the Responsible Entity (if different from above):

Headquarters Phone	
Headquarters Address	

Other Involved Parties:

First Name	
Last Name	
Involvement	[funding, directing, overseeing, preparing, and/or reviewing]

CERTIFICATION AND SIGNATURES

"I certify that this document and all attachments were prepared or compiled under my direction or supervision to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person(s) directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that submitting false information or statements is a violation of law."

Responsible Entity Signature _____ Date_____

[Insert Full Name]

2.0 RESPONSIBLE ENTITY AND SUPPLY CHAIN INFORMATION

[Include the following in this section:

- The name, contact information, headquarters location of manufacturer(s) and importer(s), if applicable;
- If the Preliminary AA Report is a consortium, the name and contact information of each participant;
- The name and contact information for any person(s) identified on the Priority Product label as the manufacturer, importer, or distributor;
- The name and contact information for all person(s) in California other than the final purchaser or lessee to whom the manufacturer or importer directly sold the Priority Product within the prior 12 months; and
- The identification and location of the manufacturer's and/or importer's retail sales outlets where the manufacturer and/or importer sold, supplied, or offered for sale the Priority Product in California.[12]]

Manufacturer(s) and Importer(s):

First Name	
Last Name	
Company	
Business Type	[Manufacturer, Importer, etc.]
Email	
Phone	
Website	
Headquarters Address	

[12] Cal. Code Regs., tit. 22, § 69505.7(d)

Consortium Participants:

First Name	
Last Name	
Company	
Business Type	[Assembler, Importer, Manufacturer, Retailer, etc.]
Email	
Phone	
Website	
Address	

Manufacturer(s), Importer(s), and /or Distributor(s) listed on the Priority Product label:

First Name	
Last Name	
Company	
Email	
Phone	
Website	
Address	

Purchasers of Priority Product:

First Name	
Last Name	
Company	
Email	
Phone	
Website	
Address	

Manufacturer(s) and/or Importer(s) Retail Sales Outlets:

Company	
Email	
Phone	
Website	
Address	

3.0 PRIORITY PRODUCT INFORMATION

[Include the following in this section:

- The brand name(s) and product name(s) under which the Priority Product is placed into the stream of commerce;
- If the Priority Product is a component of an assembled product, include a description of the known product(s) in which the component is used;
- Identify the Chemical(s) of Concern for the Priority Product;
- A reference to the position in the Appendix of the Material Safety Data Sheets and/or Safety Data Sheets related to the Priority Product.
- The information specified in paragraphs (1) and (2) of Section 69505.5(a).[13]]

Brand name(s)	
Product name(s)	
Product description(s)	
Chemical(s) of Concern	

3.1 Priority Product Function

[Identify the functional requirements of the Priority Product that must also be met by the alternatives under consideration.]

3.2 Priority Product Performance

[Identify the performance requirements of the Priority Product that must also be met by the alternatives under consideration.]

[13] Cal. Code Regs., tit. 22, § 69505.7(e)

3.3 Priority Product Legal Requirements

[Identify the legal requirements of the Priority Product that must also be met by the alternatives under consideration. Legal requirements include specifications, performance standards, and/or labeling requirements that a chemical, product, or product packaging is required to meet under federal or California Law.[14] Examples include requirements of the Federal Hazardous Substances Act overseen by the federal Consumer Product Safety Commission and the consumer product regulations overseen by the California Air Resources Board.]

3.4 Role of the Chemical(s) of Concern

[Identify the role, if any, of the Chemical(s) of Concern in meeting the functional, performance, and legal requirements of the Priority Product that must also be met by the alternatives under consideration.]

3.5 Is the Chemical(s) of Concern or Alternative Replacement Chemical(s) necessary?

[Determine if the Chemical(s) of Concern or alternative replacement chemical(s) is/are necessary to meet the Priority Product's requirements identified under paragraphs (1) of Section 69505.5(a).[15]]

[14] Cal. Code Regs., tit. 22, § 69501.1(a)(41)
[15] Cal. Code Regs., tit. 22, § 69505.5(a)(3)(A)

4.0 SCOPE OF RELEVANT COMPARISON FACTORS

[Identify which factors, associated exposure pathways, and life cycle segments are determined to be relevant, under Section 69505.5(c), for evaluation and comparison of the Priority Product and its alternatives. For each factor, exposure pathway, and life cycle segment, determined not to be relevant, explain the rationale and identify and explain the pertinent findings of the supporting information for this determination.[16]]

For more information on relevant factors, exposure pathways, and life cycle segments, refer to Chapter 3 of the AA Guide.

4.1 Relevant Factors

[The following factors, adverse environmental impacts, adverse public health impacts, adverse waste and end-of-life effects, environmental fate, materials and resource consumption impacts, physical chemical hazards, and physicochemical properties, in conjunction with an associated exposure pathway and life cycle segment, if applicable, are relevant factors if:

- The factor makes a material contribution to one or more adverse public health impacts, adverse waste and end-of-life effects, and/or materials and resource consumption impacts associated with the Priority Product and/or one or more alternatives under consideration; and
- There is a material difference in the factor's contribution to such impacts between the Priority Product and one or more alternatives under consideration and/or between two or more alternatives.[17]]

[16] Cal. Code Regs., tit. 22, § 69505.7(f)
[17] Cal. Code Regs., tit. 22, § 69505.5(c)(1)

4.1.1 Adverse environmental impacts

4.1.2 Adverse public health impacts

4.1.3 Adverse waste and end-of-life effects

4.1.4 Environmental fate

4.1.5 Materials and resource consumption impacts

4.1.6 Physical chemical hazards

4.1.7 Physicochemical properties

4.2 Exposure Pathways

[An exposure pathway is the route a stressor takes from its source to its human or ecological receptor. The identification of relevant exposure pathways shall consider chemical quantity information and the exposure factors specified in Section 69503.3(b). The chemical quantity information includes:

> (1) Quantities of the Chemical(s) of Concern or alternative replacement chemical(s) necessary to manufacture the Priority Product and each alternative under consideration; and
>
> (2) Estimated volume and/or mass of the Chemical(s) of Concern or alternative replacement chemical(s) that is/are or would be placed into the stream of commerce in California as a result of the Priority Product and each alternative under consideration.[18]]

For more information on Exposure refer to Chapter 6 of the AA Guide.

4.2.1 Chemical Quantity

4.2.2 Exposure Factors

[18] Cal. Code Regs., tit. 22, § 69505.5(c)(3)

4.3 Life Cycle Segments[19]

For more information on Life Cycle Impacts refer to Chapter 7 of the AA Guide.

4.3.1 Raw materials extraction

4.3.2 Resource inputs and other resource consumption

4.3.3 Intermediate materials processes

4.3.4 Manufacture

4.3.5 Packaging

4.3.6 Transportation

4.3.7 Distribution

4.3.8 Use

4.3.9 Operation and maintenance

4.3.10 Waste generation and management

4.3.11 Reuse and recycling

4.3.12 End-of-life disposal

[19] Cal. Code Regs., tit. 22, § 69501.1(a)(42)

4.4 Consideration of Additional Information

[The responsible entity may consider pertinent factors and information not specifically identified in Section 69505.5.[20]]

[20] Cal. Code Regs., tit. 22, § 69505.5(e)

5.0 SCOPE AND COMPARISON OF ALTERNATIVES

5.1 Alternatives Considered

[Identify and describe the alternatives chosen to be evaluated and compared. If it is determined that neither the Chemical(s) of Concern nor alternative replacement chemical(s) is/are necessary to meet the Priority Product's requirements identified under paragraphs (1) of Section 69505.5(a), one of the alternatives to be evaluated shall include the removal of the Chemical(s) of Concern from the Priority Product without the use of any replacement chemical(s).[21] In addition, identify and consider alternatives that meet the definition of "alternative" under Section 69501.1 and meet the Priority Product's requirements identified under Section 69505.5(a)(1). Research and evaluate available information that identifies existing possibly viable alternatives for consideration in the AA. This research and evaluation shall include information posted on the Department's website. Consider any identified alternative in the AA or explain in the AA Report why such an alternative is not viable for consideration.[22]]

For more information on Identifying Alternatives refer to Chapter 2 of the AA Guide.

5.2 Rationale for Alternatives not Selected

[Explain the rationale for screening out specific alternatives during the First Stage AA. For any alternative that is screened out because it is determined that its adverse impacts are equal to or greater than those of the Priority Product, describe the method used to determine equal or greater adverse impacts, including the method used to compare the multiple factors associated with the impacts, and the rationale for any trade-offs made among factors.[23]]

5.3 Comparison of Chemical(s) of Concern and Alternative Replacement Chemical(s)

[Include the information collected and the comparison conducted under Section 69505.5 for the Chemical(s) of Concern and the alternative replacement chemical(s). This must include a matrix or other summary format, that provides a clear visual comparison that summarizes the information collected regarding the relevant adverse impacts, and their associated relevant exposure pathways and life cycle segments, for the Chemical(s) of Concern and each alternative replacement chemical, and the comparative result of evaluating this information.[24]]

---

[21] Cal. Code Regs., tit. 22, § 69505.5(a)(3)(B)
[22] Cal. Code Regs., tit. 22, § 69505.5(b)
[23] Cal. Code Regs., tit. 22, § 69505.7(g)
[24] Cal. Code Regs., tit. 22, § 69505.7(g)(1)

For more information on Screening of Alternatives refer to Chapter 5 of the AA Guide.

6.0 SELECTED ALTERNATIVE(S)

[Identify and describe the alternatives selected for further evaluation in the Second Stage of the AA, and explain the rationale for the selection decision.[25]]

[25]Cal. Code Regs., tit. 22, § 69505.7(j)(1)

7.0 WORK PLAN

7.1 Discussion of Proposed Tasks for Generating the Final AA Report

[Include the work plan and proposed implementation schedule for completion of the Second Stage AA required to be prepared under Section 69505.5(f)(1). Specify the proposed submission date for the Final AA Report, and ensure that the Final AA Report or progress report, if applicable, will be submitted to the Department no later than twelve months after the Department issues a notice of compliance for the PAA Report.[26]]

7.2 Proposed Implementation Schedule

Action Item	Description	Scheduled Completion Date

[26] Cal. Code Regs., tit. 22, § 69505.7(k)

REFERENCES

[Include a list of references. All information used as supporting information in performance of the AA and preparation of the AA Reports must be cited and made available to the Department upon request.]

APPENDICES

[Include information relevant for the PAA Report, e.g., Material Safety Data Sheets and/or Safety Data Sheets related to the Priority Product, data sources, methods, assumptions, approaches.]