Safer Products for Washington | Phase 3
Working Draft Criteria for Feasible and Available

Overview of our criteria

Revised Code of Washington (RCW) 70A.350[1] requires the Departments of Ecology and Health ("we") to determine whether safer alternatives are "feasible and available" prior to restricting the use of a priority chemical. The statute that our Safer Products for WA[2] program implements does not define feasible or available. Fortunately, a number of alternatives assessment frameworks and guidance documents provide insight to address "feasible" and "available."

Technical feasibility is often broken into two categories: functional use of the priority chemical and performance of the alternative (Jacobs et al., 2016). Characterizing how the priority chemical functions in the material or product defines the performance requirements for the alternative. Some experts propose considering whether certain priority chemicals represent an essential use (Cousins et al., 2019). In some cases, a priority chemical may not be functionally necessary. Reducing or eliminating a chemical that is not functionally necessary may not require a complete feasibility evaluation.

Availability is included in a number of alternative assessment frameworks, including the Environmental Protection Agency (EPA)'s Design for the Environment Program (EPA, 2011) and the Interstate Chemicals Clearinghouse Guide for Alternatives Assessment 2017 (IC2 Guide). The IC2 Guide outlines questions to determine whether an alternative is feasible and available. The guide offers multiple levels of complexity to meet different assessment needs.

General approach for assessing feasible and available

After identifying potentially safer alternatives, we will use the criteria in the performance and cost and availability modules from the IC2 Guide to determine whether the alternatives are feasible and available (IC2, 2017):

- The performance module addresses the technical feasibility of potential alternatives.
- The cost and availability module evaluates whether manufacturers and producers currently or can use potential alternatives for the intended purpose.

In order to assess feasibility, we need to understand the performance requirements at the chemical, material, product, and process levels. After understanding these requirements, we will determine whether the alternative is used in (or marketed for) the application of interest. If it is, we will consider it feasible. If not, we will conduct a more detailed analysis of authoritative reports to determine feasibility.

We will base our availability assessment on whether manufacturers currently use the alternative in the application of interest. If they do not, we will explore whether the alternative is offered for sale and priced close to the current process or chemical. See more detail about each of these steps below.

[1] https://app.leg.wa.gov/rcw/default.aspx?cite=70A.350
[2] https://www.ezview.wa.gov/site/alias__1962/37555/safer_products_for_washington.aspx

Criteria development process

We based our process on the IC2 Guide because it provides a framework that aligns with others, such as the National Academy of Sciences (NRC, 2014), while still offering enough flexibility to meet the requirements in RCW 70A.350.[3] The Interstate Chemicals Clearinghouse, a group of representatives from state and local governments, developed the IC2 Guide. Non-governmental organizations and businesses helped develop the guide as stakeholders. Stakeholders participated through (IC2 Guide, 2017):

- Contributing to the initial scoping of the project.
- Reviewing each module.
- Three industry workshops.
- Two free webinars.
- A 60-day public comment period.

The IC2 Guide offers a number of modules—each with several levels of assessment that increase in detail—for identifying favorable alternatives. The levels allow the assessor to customize the approach based on the purpose of the assessment.

Level 1 assessments allow us to make a qualitative comparison between alternatives and the priority chemical. The purpose of this assessment is not to recommend one particular alternative, but rather to eliminate alternatives that are infeasible or unavailable. Therefore, we selected a level 1 assessment to determine feasibility and availability.

The criteria for feasible and available

To determine whether a safer alternative is feasible and available, we will follow the level 1 assessment methodology from the IC2 Guide for the performance and cost and availability modules. These modules ask a series of questions in chronological order.

If the information collected in Steps 1 through 3 (see Figure 1 below) identifies the alternative as feasible, the evaluation is complete. Otherwise, we will complete Step 4. Step 5 assesses all feasible alternatives for availability. Assessors can complete the evaluations for feasibility and availability simultaneously.

[3] https://app.leg.wa.gov/rcw/default.aspx?cite=70A.350

Figure 1. Process for identifying feasible and available alternatives (modified from the level 1 performance and cost and availability modules from the IC2 Guide).

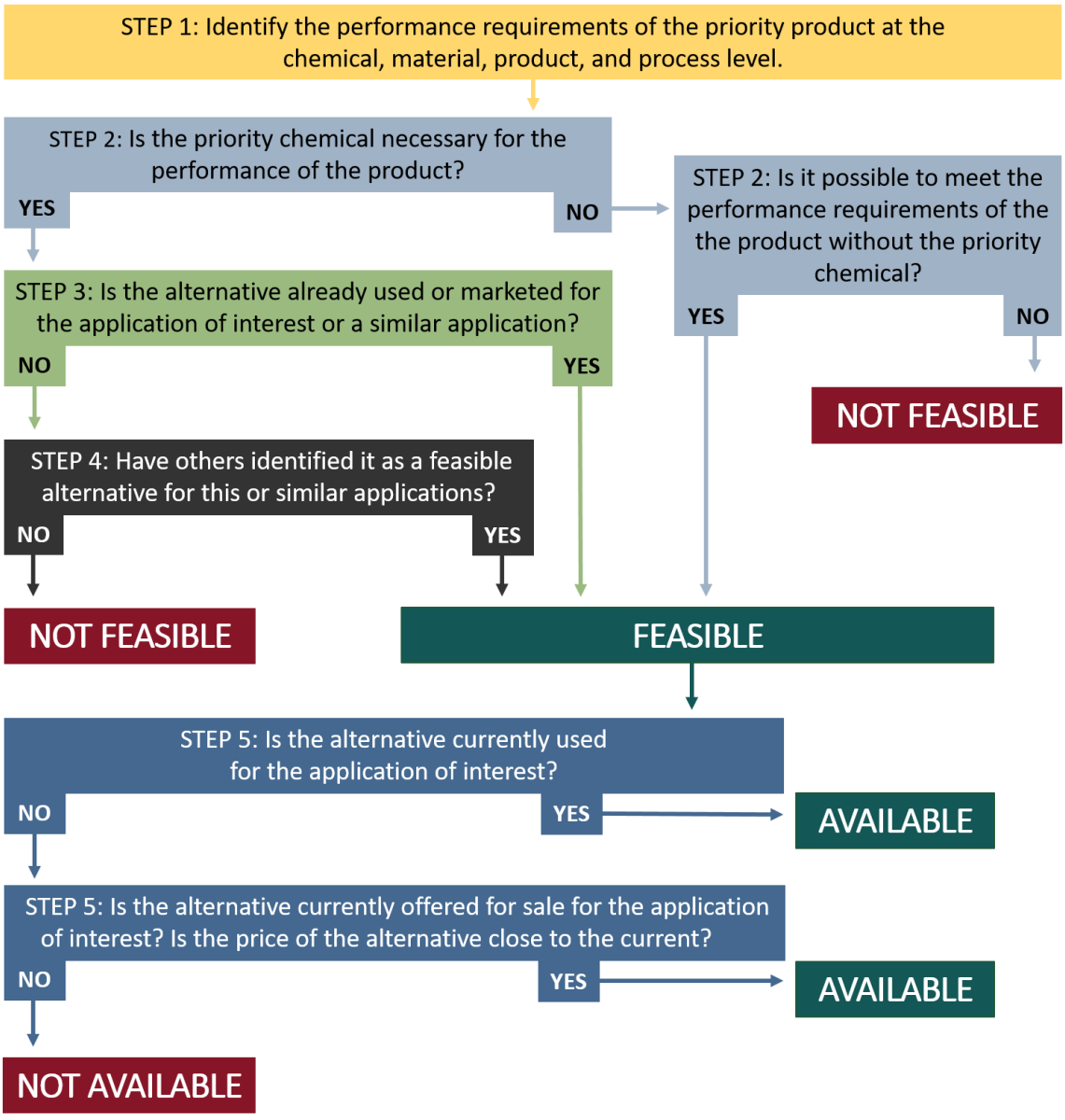

Figure note: For an accessible text version of this graphic, see Appendix 2.

Step 1: Identify the performance requirements of the priority product at the chemical, material, product, or process level.

We will identify the performance requirements by characterizing the function that the priority chemical serves at the chemical, material, product, or process level. For example:

- The priority chemical can impact performance at the **chemical level** by acting as a surfactant.
- Plasticizers—such as phthalates, which make plastic more flexible—impact performance at the **material level**.

- Performance requirements at the **product level** may include fire safety, which flame retardant chemicals could provide.
- Catalysts are chemicals that can impact performance at the **process level**.

We will share preliminary results from our work to identify safer, feasible, and available alternatives, and solicit feedback from stakeholders on our proposed definitions of the performance needs. Industry and manufacturers have valuable information about chemical and process requirements. Community groups have useful insight about which performance requirements matter to end-users.

Input from a diverse group of stakeholders is important because it will help us not only set realistic expectations for alternatives, but also understand over-engineering. Understanding the function that the priority chemical serves tells us what the alternative needs to accomplish. In subsequent steps, we will use these performance requirements as a lens to evaluate alternatives.

Step 2: Is the priority chemical necessary for the performance of the product?

If step one does not identify any performance needs related to the priority chemical, we need to consider whether that chemical is functionally necessary for the product. Reducing or eliminating a chemical that is not necessary for a product to function may be feasible. If alternative processes can avoid the use of the priority chemical (or an alternative chemical) all together, we would consider those processes as alternatives.

If the priority chemical is an impurity or a by-product, we will determine whether it is possible to manufacture the product without the priority chemical, or in a way that reduces its level. To determine whether removing the priority chemical is feasible or whether further evaluation into the feasibility is necessary, we will answer the following questions:

a. **Could an alternative process serve this function?**
    - If the priority chemical serves no function, or if alternative processes achieve the same function, consider whether a product without the priority chemical could show the same performance requirements.
b. **Is the priority chemical an impurity or a by-product of the manufacturing process?**
    - If the priority chemical is not an impurity or a by-product, the feasibility evaluation continues to step three.
    - If the priority chemical is an impurity or a by-product, and removing the chemical would not alter the product performance, manufacturers should remove the chemical. If removing the impurity is feasible, no further feasibility evaluation is necessary.
    - If removing the impurity or by-product would result in a change that could alter performance, the feasibility evaluation continues.
c. **Are other chemical sources available without the by-product, impurity, or contaminant?**
    - If alternative sources are available without the by-product, impurity, or containment, and if using those sources eliminates the priority chemical, then this is feasible and no further feasibility evaluation is necessary.
    - If the alternative source reduces the priority chemical, continue to look for opportunities for further reduction, and consider continuing the evaluation.
    - If there are no alternative chemical sources, the evaluation continues.

Step 3: Is the alternative already used or marketed for the application of interest or a similar application?

In this step, we will use the performance requirements from step one to evaluate alternatives. Feasible alternatives must meet at least one of the following criteria:

1. Other manufacturers use the alternative for the same or a similar function.
2. Similar products that are available on the commercial market use the alternative.
3. Others market the alternative in promotional materials as an option for providing the desired function within the specific application of interest.

If the alternative is feasible based on the questions above, then the evaluation is complete, and we continue to step five to assess availability. If not, we complete step four.

Step 4: Have others identified the alternative as feasible for this or similar applications?

If we do not find enough information to show feasibility in step three, we will review authoritative reports and other sources to assess feasibility. We consider alternatives that authoritative bodies identify as favorable for this or similar applications as feasible. Alternatives that we did not identify as feasible based on the outcome of step three will meet at least one of the following criteria:

1. An authoritative body identified the alternative as favorable.
2. An authoritative body identified the alternative as favorable, with some indications that it might not perform as well, but the difference in performance is not crucial to the product.
3. An authoritative body identified the alternative as unfavorable, but modifications to the process could make the alternative feasible.
4. An authoritative body identified the alternative as unfavorable, i.e., not a viable alternative based on performance. However, the application is not identical to the application of concern, and the process or product can be modified to accommodate the alternative.

We will consult the IC2 Guide for further details in assessing these criteria.

Step 5: Is the alternative currently used or available for the application of interest or a similar application?

To determine whether a safer alternative is available, we will follow the level 1 assessment from the cost and availability module in the IC2 Guide. We will first determine whether manufacturers currently use the alternative in the application of interest. A positive answer to step three, question one, can address this. If manufacturers already use the alternative in the application of interest, we will consider it available, and no further assessment is necessary.

If manufacturers do not use it in the application of interest, we will consider whether it is offered for sale at a price that is close to the current. An example could be an alternative surfactant that is sold at a price similar to more hazardous surfactants, but is not currently used in detergent. In this case, we may still consider the alternative available. If needed, we will define “close to the current” on a case-by-case basis—relying on existing alternatives assessments and frameworks, and with stakeholder feedback. Available alternatives must meet one of the following criteria:

1. Others currently use the alternative in the application of interest.
    - If so, the alternative is available, and the analysis is complete.
2. The alternative is currently offered for sale in the application of interest. The price of the alternative is close to the current.

Appendix 1. References

Interstate Chemicals Clearinghouse. (2017). Alternatives Assessment Guide Version 1.1 (IC2 AA Guide). Retrieved November 13, 2020 from http://theic2.org/alternatives_assessment_guide#gsc.tab=0

Jacobs, M., Malloy, T., Tickner, J., & Edwards, S. (2017). Alternatives Assessment Frameworks: Research Needs for the Informed Substitution of Hazardous Chemicals. *Environmental Health Perspectives, 124*, 265 – 280. doi: 10.1289/ehp.1409581

National Research Council (NRC) Washington, DC. National Academies Press. (2014). A Framework to Guide Selection of Chemical Alternatives.

U.S. Environmental Protection Agency (EPA) (2015). Design for the Environment Alternatives Assessments. Retrieved November 13, 2020 from https://www.epa.gov/saferchoice/design-environment-alternatives-assessments#steps

Appendix 2. Accessible flowchart information

The process for identifying whether a safer alternative is feasible and available, outlined in Figure 1, is as follows:

- Step 1: Identify the performance requirements of the priority product at the chemical, material, product, and process level.
- Step 2: Is the priority chemical necessary for the performance of the product?
    - If yes, move to Step 3.
    - If no, is it possible to meet the performance requirements of the product without the priority chemical?
        - If yes, the alternative is feasible, and we move to Step 5 to assess availability.
        - If no, the alternative is not feasible.
- Step 3: Is the alternative already used or marketed for the application of interest or a similar application?
    - If yes, the alternative is feasible, and we move to Step 5 to assess availability.
    - If no, move to Step 4.
- Step 4: Have others identified it as a favorable alternative for this or similar applications?
    - If yes, the alternative is feasible, and we move to Step 5 to assess availability.
    - If no, the alternative is not feasible.
- Step 5: Is the alternative currently used for the application of interest?
    - If yes, the alternative is available.
    - If no, we move to the second part of Step 5.
- Step 5 (second part): Is the alternative currently offered for sale for the application of interest? Is the price of the alternative close to the current?
    - If yes to both, the alternative is available.
    - If no (to one or both), the alternative is not available.