

Initial evaluation module for individual chemicals within a product:

Purpose: The purpose of this initial evaluation module is to determine whether or not a chemical of concern is needed and if the product will function without it. If the chemical can be eliminated from the product then an alternatives assessment may not be needed.

Example: A major sportswear manufacturer found in its rubber formulations that several toxic chemicals in the formulation were historical artifacts and were not actually needed for performance of the product. Rather than conduct an alternatives assessment, it was easier to eliminate the chemicals.

Comment [MG1]: Awkward because this doc does not provide guidance to "determine" this, the user determines it (by careful process/product analysis, trials, cost-benefit analysis, availability, etc.).

Comment [MG2]: Equally awkward. No context, sort of pointless. Little detail.

And, if you are going to have examples, why wouldn't you have others – e.g., that result in drop-in replacements, or an example that looks at several alternatives and conducts the assessment, finds a substitute?

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Comment [MG3]: a) and b) seem unrelated to question 1. Seems like they should be numbers 2 and 3.

Comment [MG4]: Ok, now what do I do with the answer to this question? (other questions give a i or ii option).
Do you want an a)
If 'high', and you can't find a replacement, can the concentration be reduced?

Comment [MG5]: Trying to break this question (now #5) out a bit from the intentional/unintentional issue.

This question could conceivably be deleted because it is "built in" to questions in the intentional/unintentional section.

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Comment [MG6]: Q #5 and #6 were initially together. These are two whole different questions. I think the intent of this section is to determine if intentional/unintentional added. Within that, you can ask about the function of the chemical in the product.

1. Does your business portfolio include other products that cover the same product type? If so, can this product be considered for sunset?

i. If yes, sunset the product, no alternatives assessment necessary.

ii. If no, continue with alternatives assessment.

~~a-2.~~

Has the product containing the chemical of concern reached maturity and should it be considered for sunset?

i. If yes, sunset the product, no alternatives assessment necessary.

ii. If no, continue with alternatives assessment.

~~b-3.~~

Should it be considered for the next product innovation cycle?

i. If yes, submit product for redesign and development informed by Green Chemistry Principles

ii. If no, continue with alternatives assessment

~~2-4.~~

For the chemical of concern, at what concentration is it in your product?

5. How did the chemical come to be in the product? What function does the chemical serve in the product? (Use this response to assist in answering the questions and directives in item 6 below)

~~3-6.~~

Is the chemical? (Was it intentionally or unintentionally added?)

a. If unknown whether it is intentional/unintentional, investigate in the product supply chain to identify reasons for presence of toxic chemical, i.e. what benefit does it provide either to the manufacturing process or to the end product?

b. If unintentionally added, is it a by-product or impurity in other chemicals used in the product formulation? (example: 1-4, dioxane contamination in surfactants)

c. Would removal of the chemical with the impurity, or removal of the chemical generating the by-product affect product performance?

i. If no, eliminate the chemical and no alternatives assessment necessary.

ii. Are there other chemical sources that do not contain the by-product or impurity that would be a viable substitute?

iii. If yes, select source to

1. Reduce or eliminate the amount of the by-product or impurity (example: 1,4, dioxane in surfactants).

- A. If eliminated, no alternatives assessment necessary.
- B. If reduced, to what level and are there opportunities for further reduction?

Need for alternatives assessment depends on level of reduction.

- d. If intentionally added, what is its function in the product?
 - i. Is the function performed necessary for the success of the product?
 - 1. If no, eliminate the chemical and no alternatives assessment necessary.
 - 2. If a substitution is necessary, continue with the alternative assessment process.
 - ii. Could the product formula be adjusted to eliminate the chemical (without the addition of any new chemicals)?
 - 1. If yes, reformulate and no alternatives assessment necessary.
 - iii. Are there opportunities to reduce the amount used? (example: zinc in rubber where the amounts were reduced by 75%).
 - 1. If yes, ?
 - 2. If no, continue with alternative assessment to see if chemical can be eliminated completely.
 - iv. Is it likely that an alternative might be used in place of the toxic chemical?
 - 1. If no alternative is thought to exist, explain why? (For example, there may be no viable alternative to lead in radioactive shielding...); Continue with alternatives assessment.

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Comment [MG7]: Not very explicit on what I am supposed to do with this statement...this needs to be better explained, elaborated, and/or made into a more "directive" statement or question.

maybe something like – "Can the amount or concentration be reduced to an acceptable level, such that an alternative assessment and alternatives is not needed?"

Comment [MG8]: Repeat of initial question #3. . This question should have already been answered, so could be removed.

Comment [MG9]: d) has already been asked. Could eliminate and move current i) question to the "d" spot.

Comment [MG10]: The "alternatives assessment" will not tell you if chemical can be eliminated. This is a process or design question and must be field tested –including functional/economic/viability considerations.

Comment [MG11]: If there are no alternatives, how can you conduct assessment?

Comment [MG12]: ??? this is not helpful to a user in any way.

Needs more substance. How would they be adapted? Who would adapt them? Are manufacturers going to cooperate and disclose everything customers want to see?

Tools:

- Material declarations often being requested from suppliers by manufacturers (could be adapted to provide info to answer these questions)
- More?
- Supplier involvement in assessing/redesigning?
- Need more