

5.2 Guidance

Options to act on unwanted CoCs

This document is part of the *International Chemicals Management Toolkit for the Toy Supply Chain* developed by the United Nations Environment Programme (UNEP) in collaboration with the Baltic Environmental Forum (BEF) within the framework of the Global Environment Facility (GEF) project ID: 9771 on Global Best Practices on Emerging Chemical Policy Issues of Concern under the Strategic Approach to International Chemicals Management (SAICM).

This guidance supports decision making on options to act on unwanted CoCs. The starting point of the guide is the [priority list of unwanted CoCs](#). The guidance does not address incompliance regarding labelling or providing testing certificates etc. which may also be a high priority for action. Implementing these [legal requirements](#) should be done without delay and according to the specific requirements.

If substitution is selected as an option to act, further guidance on the substitution process, including the [assessment of alternatives is provided in the toolkit](#).

Reasons for acting on CoCs?

There are many reasons why companies may consider acting on CoCs. One of the most important reasons is to address non-compliance with regulatory requirements. Similarly, the announcement that a chemical will be banned or restricted in the future is a strong incentive. Further common drivers (ECHA 2018, ECHA 2020) for acting on CoCs are listed in Table 1.

Table 1: Compilation of internal and external drivers to act on CoCs

Internal drivers for action
Alternative leads to a better product quality or provides better technical functionality
Company policy to reduce environmental or human health impact (e.g., lower exposure, reduced chemical emissions)
Competitive advantage of a 'greener' product / brand reputation
Economic considerations (e.g., efficiency, waste, other)
External drivers for action
Current or future legal/ sectorial requirements or requirements relevant to the target markets
Pressure from the supply chain, consumers, or the public
Limited supply of raw material or other resources, supplier ending production, steep increase of prices
Market competition due to quality/ price/ other

Deciding on an option to act

There are four options to act on a CoC which has been prioritised for action. These options are listed in the following table and arguments are provided as to why an option could be chosen or not. The table does not consider the technical feasibility of these options, as they depend on several, case-specific factors such as the type of product concerned, the type of CoC, the legal requirements, the company policy, the customer demands, and the production process etc.

Table 2: Overview of options to act and their pros and cons

Option to act	Pro	Con	Comment
Reduce concentration below legal threshold or level causing only insignificant exposures (and risks). Either 'just' reduce (potentially accepting deteriorating quality) or add another chemical with the same function to retain the functionality	<ul style="list-style-type: none"> ● Low implementation efforts ● Makes product compliant and/or reduces risk ● Cost-effective 	<ul style="list-style-type: none"> ● CoC is still contained in the product, i.e., can be identified in testing and should be controlled ● Changes in legislation might require another reduction. ● An additional chemical may be needed, which makes the product more complex. There may be a risk of regrettable substitution. 	<ul style="list-style-type: none"> ● Applicable to manufacturers of chemical products, including polymer compounds (based on customer request) ● Remaining under legal concentration limits is a must.
Redesign product , i.e either use another material, or eliminate the (need for a) product part or material	<ul style="list-style-type: none"> ● CoC can be eliminated ● Proof of compliance possible based on input material documentation ● Clear communication possible, good marketing opportunity ● Need for future action prevented ● Opportunity to innovate the product and change several aspects at once 	<ul style="list-style-type: none"> ● Might significantly change product appearance and performance, potentially resulting in loss of clients ● High resource input for a new design phase 	<ul style="list-style-type: none"> ● Mainly applicable for toy assemblers and producers of toy parts
Stop marketing / production	<ul style="list-style-type: none"> ● Can be implemented immediately ● No investments needed 	<ul style="list-style-type: none"> ● Loss of income and clients 	<ul style="list-style-type: none"> ● Relevant option for products that do not sell 'anyway' and/or where several aspects are identified as critical
Substitute with (less harmful) chemical(s)	<ul style="list-style-type: none"> ● CoC can be eliminated ● Proof of compliance possible based on input material documentation ● Clear communication possible, good marketing opportunity ● Need for future action 	<ul style="list-style-type: none"> ● Exchange of entire mixtures may be 'easy', but substitution of CoCs in mixtures may require substantial human and financial resources, and time ● Unclear if quality of product can be 	<ul style="list-style-type: none"> ● Mainly applicable for producers of chemical mixtures / polymers as well as toy producers using mixtures ● Benefit depends on the alternative ● Regrettable

Option to act	Pro	Con	Comment
	prevented	maintained <ul style="list-style-type: none"> • May result in uncertainties due to new suppliers, warranty etc. 	substitution #Section 5_7 avoid must be prevented

The change/**reduction of the concentration**(s) of chemicals, including CoCs in chemical products, belongs to the core know-how and business activities of the producers of chemical mixtures, such as polymer compounds. Users of compounds [may request that their suppliers](#) provide them with a product with similar technical quality but a reduced CoC concentration and the supplier may decide to provide it.

The **design of products (toys)** is the core business of the assemblers of toys and the toy part producers. If they (or their customers) consider the redesign an option to avoid the use of CoCs, a larger innovation will take place and several (other) aspects can be changed along with the chemical composition of the toy.

Ending the production or marketing of products (chemicals, toy parts and completed toys) is an option that can be easily implemented by all companies and does not require further guidance. However, it also means that a product does not create any income anymore.

Substitution of CoCs is the most challenging of the options to act. Frequently, substitution is implemented in a way that ‘only a slight change’ in the product is necessary (less than the complete redesign). This process is discussed further in this guidance.

What is substitution?

“Substitution means the replacement or reduction of hazardous substances in products and processes by less hazardous or non-hazardous substances, or by achieving an equivalent functionality via technological or organisational measures” (Lohse *et al* 2003).

According to this definition, substitution results in the elimination or reduction of [hazards](#) (of a chemical or a product) and a related elimination or reduction in exposure and risk. In addition, if [CoCs are regulated](#), the substitution can help achieve a compliant product.

There can be several types of substitution (ECHA 2019), which are explained in Table 3

Table 3: Types of substitution

Types of substitution	Examples
1. Elimination of a chemical (no replacement)	A fragrance ingredient in a plastic duck is eliminated without losing the function (but possibly resulting in a different or no smell) of the product.
2. Drop-in substitution (1 to 1) of a chemical (one chemical is replaced by another without additional changes)	A cadmium containing yellow pigment in a plastic duck is replaced by an organic yellow pigment which according to current knowledge is not hazardous. The plastic duck is still yellow but maybe a slightly different tone. The overall composition was not affected by this change.
3a. Changed product or process design by implementing chemical alternative	The producer of polymer pellets (raw material for a toy duck) replaces the phthalate plasticizer DEHP by a plasticizer DINCH in the composition. The entire polymer needs to be reformulated (by re-adjusting the concentrations of most other components).
3b. Changed product or process	The manufacturer of plastic parts for a toy duck, who used to combine the

design by implementing non-chemical solution	parts of the duck with a glue (containing a CoC) changes the moulding process to make the duck from just one piece to eliminate the use of the glue. In addition, the assembler of the plastic duck, who glues accessories onto a duck toy, replaced the type of accessories from ones containing CoCs to ones without CoCs (from another supplier).
3c. Changed product or process design by implementing new technology.	The manufacturer of the plastic duck cleans machine parts manually with a CoC-containing cleaner. Installing special cleaning baths (new technology) with non-hazardous cleaner allows eliminating worker exposure and use of CoCs. This substitution is not relevant for the toy duck.

References:

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