

5.5 Example

Substitution of CoCs in toys

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The company 'Tub-duck', a producer of soft plastic bath toys, received a letter from their main client (a retailer selling their products in a few different countries) asking whether 'Tub-duck' uses certain CoCs in the manufacturing of their products. The customer company changed its chemicals policy regarding the phase-out of certain CoCs and related control procedures of input materials. The company 'Tub-duck' provided information that some of those CoC listed are contained within the soft plastic bath toys.

A few weeks later, 'Tub-duck's' environmental manager received a letter from the same client stating that in the future, no input materials would be accepted that contain the listed substances, due to the retailer's health and safety policy. The retailer gave 'Tub-duck' 6 months to provide a new input material. Following this, 'Tub-duck's' board held a meeting and decided to improve their product by phasing out the relevant CoCs to keep their main client.

'Tub-duck's' environmental manager [prioritised the CoCs for action](#). The most pressing change needed was to phase out the phthalate plasticiser DEHP, which was present in the polymer constituting most of the bath toys. The company formed an expert group to work on the substitution. The team defined technical requirements for possible alternatives and started asking their current suppliers about alternative polymer compounds without DEHP. After a negative reply, the team started looking for other providers and contacted several companies offering DEHP-free polymer compositions that fit the technical requirements. After the requested information on chemicals was received, the team [assessed the alternatives](#) by comparing the technical properties, price, as well as the chemical compositions and the hazard information provided in the safety data sheets of the two alternative materials.

To compare the impacts of the potential alternative chemicals, the [USEtox tool](#) was used. Two potential alternative polymers were selected for testing. Both were phthalate-free, instead containing DINCH as the plasticiser. A testing plan was developed, and test batches were ordered. Both alternatives proved to perform well in small-scale manufacturing tests. The testing was concluded with chemical analysis carried out by a certified laboratory of two toy samples made from the alternative polymers. The company chemical analysis concerned heavy metals, phthalates and selected brominated compounds. The test results showed that alternative no.1 was phthalate free but contained a significant concentration of heavy metals.

Based on the assessment of the two alternatives regarding the content of chemicals with hazardous properties, the assessment of exposures and potential impacts, testing of both products in the production, and the chemical analysis, the alternative no. 2 was selected due to its lower hazard. The company continued with further substitution projects to fulfil their clients' request by the set deadline.