

Case Study – Substituting AP/APEO

1. Background and target

In December 2015, Kaufland signed up to Greenpeace's DETOX campaign with a pledge to eliminate environmentally hazardous chemicals from its own brands/imports in the footwear, apparel and home textile ranges by 2020. Visit www.kaufland.com/detox to read the DETOX commitment and DETOX report.

With signing the DETOX commitment, Kaufland has undertaken to stop using the environmentally hazardous chemical group of alkylphenols (AP) and alkylphenol ethoxylates (APEO) and to replace these with more environmentally friendly alternatives.

The substances of the AP/APEO chemical group are frequently used as a surface treatment agent in the shoe, textile and home textile industry in wet processes in which textiles are dyed and printed. The most important compounds of this group of chemicals include NPEO (nonylphenol ethoxylates) and OPEO (octylphenol ethoxylates), which are used as chemical cleaning agents. They are washed out in the end products and therefore frequently make their way into the environment through the wastewater. Apart from the fact that they are not easily biodegradable, their endocrine disrupting properties in particular are considered critical.¹

This case study examines the case of a supplier in Bangladesh where wet processing processes have been optimised by replacing AP/APEO with more environmentally friendly alternatives.

2. Case study: Textile producer in Bangladesh

The supplier selected for the case study is a manufacturer of pullovers for Kaufland in Bangladesh. In addition to the end production, wet processes such as dyeing, washing and printing are also carried out at the factory.

With signing the Kaufland DETOX commitment in February 2016, the supplier had agreed to eliminate the 11 hazardous chemical groups specified in the commitment from its production processes (wet processes) and end products by 2020. Kaufland provides, carries out or coordinates appropriate training sessions, regular water tests and analyses, plus audits and consulting sessions, with a view to achieving this aim.

¹ source: <http://www.eurofins.com/media/1556/apeo-in-textiles-en.pdf>

2.1 Water test results

A test institute commissioned by Kaufland took individual water samples from the incoming and wastewater to carry out water tests in the supplier's wet processing facilities.

On-site observations:

- No water pre-treatment plant in place
- The wastewater was diverted straight to a holding pond/cesspool without being treated

In the water tests that were carried out, APEO was detected in the wastewater – 2 ug/l of nonylphenol (NP) and 4 ug/l of NPEO. The result of the water test was published on the IPE website.²

The water was tested for the following compounds of the AP/APEO chemical group:

AP/APEO	Incoming water	Wastewater	Detection threshold
Octylphenol (OP)	Not detected	Not detected	1 ug/l
Nonylphenol (NP)	Not detected	2 ug/l	1 ug/l
NPEO, n≈1-2	Not detected	Not detected	1 ug/l
NPEO, n≈3-18	Not detected	4 ug/l	1 ug/l
OPEO, n≈1-2	Not detected	Not detected	1 ug/l
OPEO, n≈3-18	Not detected	Not detected	1 ug/l

Table 1: Water test results for AP/APEO

2.2 Results of the end product test

Commissioned by Kaufland, the three pullover deliveries from the supplier in 2016 were subject to random checks in external laboratories. In one of the product tests, 42 mg/kg of NPEO were detected. The other random checks showed no abnormalities.

The water was tested for the following compounds of the AP/APEO chemical group:

APs/APEOs	mg/kg
NPEO	42
OPEO	Not detected
Nonylphenol (NP)	Not detected
Octylphenol (OP)	Not detected

Table 2: Product test results for AP/APEO in pullovers

² IPE = Institute of Public and Environmental Affairs: Institute for Environment and Systems Analysis

2.3 Results of the DETOX audit and proposed solutions

The Kaufland DETOX audit was performed by Kaufland's own DETOX auditors from 26th-27th November 2016. All negative findings were recorded in a management action plan with instructions to rectify the situation within a given timescale. Kaufland also assists the supplier by providing external expertise. Chemical experts offer the plants advice on their chemical management systems and suggest possible solutions with a view rectifying any discrepancies observed and eliminating critical chemicals from the production process completely.

Findings and improvement suggestions: AP/APEO is used in industrial detergents as a surfactant. During its washing process the supplier uses the chemical "Powersoft 180" by the manufacturer Wacker which, according to the Safety Data Sheet, contains up to 20% (nonylphenoxy)polyethylene oxide (NPEO). This explains the findings of NPEO, n≈3-18 to the amount of 4 ug/l as well as 2 ug/l of NP in the wastewater. Although the product test result of 42mg/kg of NPEO is below the current Kaufland threshold of 100mg/kg, the mid-term goal is to eliminate all APs/APEOs completely.

Proposed solution: We recommend substituting the "Powersoft 180" chemical by Wacker with an AP/APEO-free silicone fabric conditioner. Together with the supplier, Kaufland's chemical experts will check the alternative fabric conditioners available in Bangladesh on the basis of the Safety Data Sheets and confirm suitable alternatives. Furthermore, the conformity of all wetting agents/silicone fabric conditioners used at the wet processing facility must be tested by the supplier.

3. Next steps

In the future, more water tests and their analysis will be carried out annually by a test institute engaged for this purpose. One year after the initial audit, a DETOX re-audit will also be performed to check that the proposed improvements in the wet processing facility have been implemented.

We are in regular contact with the supplier/wet processing facility and the chemical inventory will be regularly updated. Additional product tests will also be carried out and product samples analysed.

Kaufland is working together with external experts and the chemical industry to draw up a positive list of environmentally friendly chemicals. This list will be gradually extended so that the plants/wet process facilities can be offered alternatives for the substitution process. A positive list of wet process facilities will also be provided: the water tests and Kaufland

DETOX audits show which wet process facilities are able to meet the DETOX requirements and where there is still potential for improvement. In turn, this will allow Kaufland to identify the need for further training and advice. Wet process facilities that produce products in accordance with DETOX standards and successfully meet the requirements are identified to Kaufland suppliers as "best practice" companies.

All suppliers are also offered training material, including leaflets such as: "What is AP/APEO?", "Hazards Associated with AP/APEO", "Kaufland's Rules and Requirements", "AP/APEO Sources in Footwear and Clothing", "Handling of AP/APEO" and "Substituting of AP/APEO".