

Case study: chemical substitution (NPEO)

This case study outlines how a bulking agent, used in the cleaning of dyeing machines, containing Nonylphenol Ethoxylates (NPEOs) can be substituted with a non-APEO alternative.

Primark has a stringent chemical management policy in place which complies fully with, and goes beyond, EU legislation. Beyond this, Primark recognises the importance of continuing to evolve its chemical management policy in line with industry best practice and of continuing to minimise the environmental impact of textile manufacturing processes.

As a result, Primark has committed to working with industry and other stakeholders to achieve the goal of 'zero discharge' of hazardous chemicals within the textile and apparel supply chain by 2020.

In line with this, a pilot study was conducted to assess current chemical usage and to identify issues related to chemical management practices in a selected Chinese textile dyeing mill. Test results from the dye mill in China detected traces of Nonylphenol Ethoxylates (NPEOs) in the dyeing effluents.

After communicating with the mill and its chemical suppliers, it was confirmed that the 'bulking agent' purchased from local chemical suppliers was likely to contain TX-10 (NPEOs). Despite this agent having only been used in the cleaning of machinery between different dye batches, traces were still detected in the effluent. Recommendations regarding how this chemical could be substituted were made; Primark is continuing to support the mill to ensure it is phased out and a safer alternative is phased in.

Nonylphenol Ethoxylates (NPEOs) are a type of Alkylphenol Ethoxylates (APEOs). All APEOs, including NPEOs, are present on various restricted chemical lists, both governmental and non-governmental. Primark has identified APEOs as priority chemical group for phase out.

Having identified the bulking agent as the source of NPEO contamination, the recommendation was made to use a non-APEO substitute. Two relevant alternatives were found. The first is a detergent called 'Sera® Wash M-VFN' from DyStar which is based on alkylamine chemistry rather than APEOs; the second is the solvent based machine-cleaner 'Sera® Con M-FRN' from DyStar which contains an ethoxylated fatty acid as the principal ingredient.

These are currently both slightly more costly alternatives than the NPEO-based chemical used previously. The APEO-free formulations are advantageous, however, from a compliance perspective, enabling the mill to demonstrate a risk-based approach to production.

Sera is a trademark of DyStar Colours Distribution GmbH