



Case study: APEO's investigation report

Prato, April 2017

Detox Commitment of 27 mills in Prato Textile district

Berto Industria Tessile endorsed the Detox commitments and acknowledged how important it is to eliminate dangerous substances from the textile production cycle.

Supported and led by Consorzio Italiano Implementazione Detox, we have started to improvement process through the elimination of such substances according to the transparency, prevention and precaution principles of the Detox campaign.

In this roadmap, we are committed to eliminate Alkylphenols away from our supply-chain.



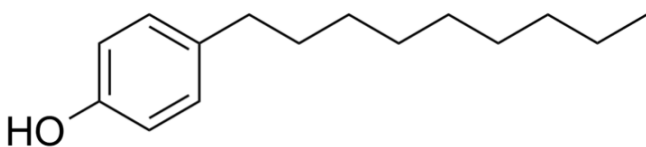
Applications of Ethoxylated Alkylphenols (APEOS)

Ethoxylated alkylphenols (APEOS) are a large category of non-ionic surfactants which have good performances as detergents, emulsifiers, disperdents and so on.

APEOS and especially ethoxylated nonylphenols (NPEO) had a large use in textile industry (detergents, emulsifiers) but also in home and domestici use.

Other industrial branches that can use APEOS are leather industry, cosmetics, health-care products and home products; furthermore, some nonylphenols derivatives were found in plastics as antioxidants.

Regarding ethoxylated octylphenols, despite less trusty data are available, they seems to have the same uses on nonylphenols.



Environment arrangement

Ethoxylated (APEOS) and non-ethoxylated (AP) alkylphenols are present in ground and sea water, in sediment because of their gathering capability, in sludge and waste disposal.

Even studies on fauna are still poor, high level of APEOS were detected in birds and fishes living near rivers that flow in regions where there are APEOS production plants.

It's foreseeable the presence of APEOS in finished textiles products because of probable contamination of chemical products (surfactants, emulsifiers, dyestuffs) and/or in raw materials (wool, cashmere, and so on).



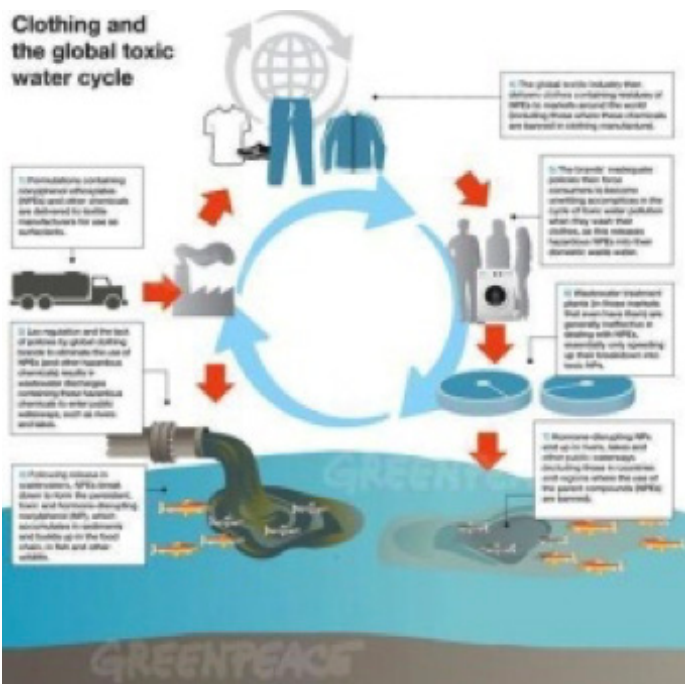
Recent studies show the presence of APEOS in some food in Germany, but clinical effects on human body are not still well explained.

Risks due to APEOS

Dangerousness of APEOS derived from their degradation in less-ethoxylated short chain derivatives and in non-ethoxylated original phenols (e.g. nonylphenol and octylphenol).

Risk assessment made by EU reveal that use of APEOS cause high risks to aquatic organisms because of their oestrogen activity that can mimic natural hormones.

This can lead to abnormal sexual behaviour of many organisms: the most important example is “femminisation” of fishes reported in United Kingdom (Jobling *et al.* 2002).



Human risks still remain unclear, although recent studies pointed out a feasible disease in mammalian spermatid function and some damages in human lymphoid cell's DNA.

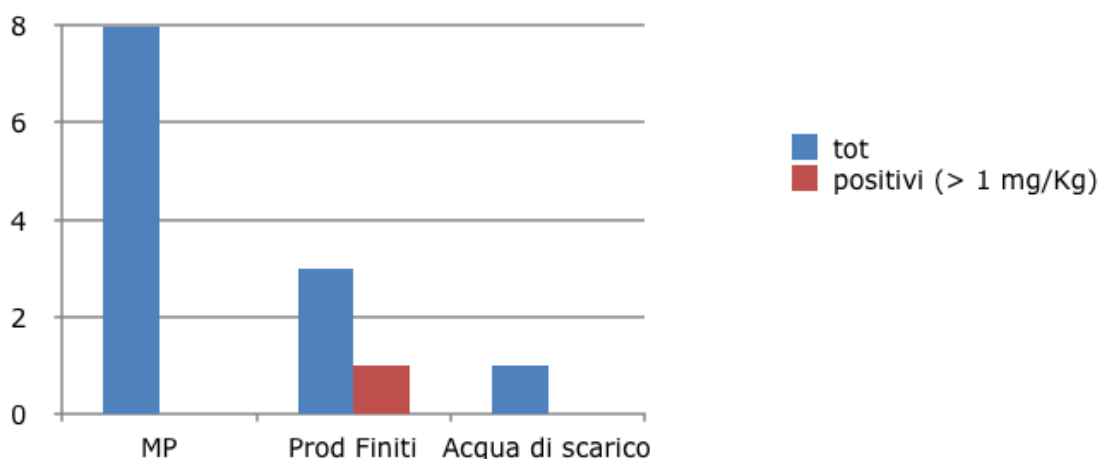
BERTO INDUSTRIA TESSILE

Berto Textile Industry was founded in 1887 in Bovolenta, today the company is recognized as an excellent player of the Italian denim production chain. A long story of textile knowledge, a strong company that offers a wide and costume made range of products, with a flexible manufacturing system.

APEOS investigation plan results

Berto started an investigation plan in order to monitoring their supply chain and internal manufacturing processes.

In this publication there is a report in which the presence of APEOS is considered positive when value is above MRSL limit (1mg/kg).



Measure to improve quality and conclusions

As noticed from previous graphs, APEOS presence is constantly decrease.

This is probably mainly due to a progressive substitution of APEOS with equivalent product in many part of the world (China, Australia) for raw material washing treatments.

Berto still continue in monitoring this parameter in order to evaluate any critical topics and start efficient improving measurements.