

## APEOS Case Study

Investigation into the current compliance to APEOs ban  
2017

Miroglio Fashion s.r.l.

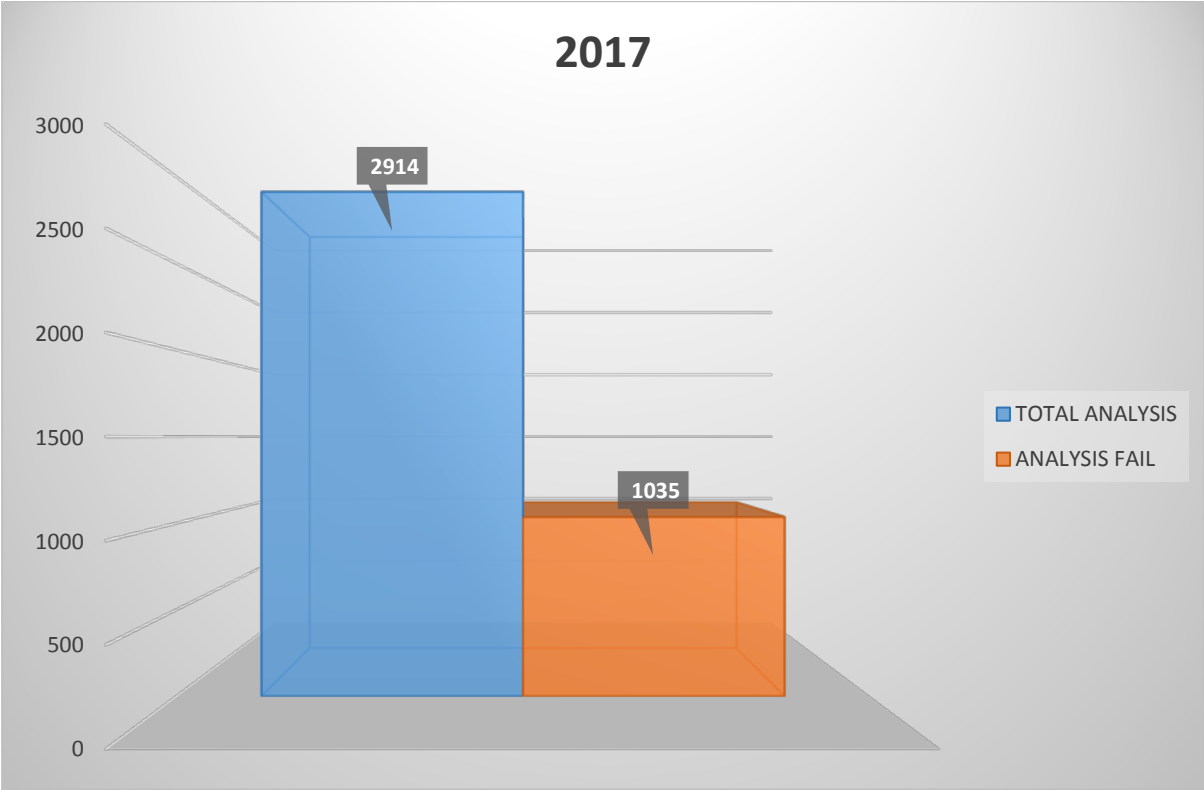
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**SCREENING RESULT**

Test reports are done by a certified lab using a method based on a direct determination of APEOS through liquid chromatography-mass spectrometry (LC-MS/MS).

We made the screening at the end of 2017, after picking 2914 pieces produced in the year as you can observe in *Figure 1*. The amount of fail tests was 1035; consequently, talking in percentage the 35.5 % of the reports showed fail tests.



*Figure 1 General Analysis 2017*

Figure 2 compares the concentration of APEOs in the different fibers. The main fibers are Animals, Leather, Synthetic, Artificial and Vegetable fibers.

The critical situation regarding this assessment can be identified with the animal fibers followed by Leather. If compared to the year 2016, in this graph it can be analyzed a critical worsening in Animal, Leather and Synthetic fiber:

- Animal: the level has increased from 57% in 2016 to 64% in 2017, so far;
- Leather: the level has increased from 52% in 2016 to 58% in 2017, so far;
- Synthetic: the level has increased from 40% in 2016 to 44% in 2017, so far.

In case of animal & synthetic fibers, this increase is also due to the fact that this year we have bought much more regenerated material for our collections.

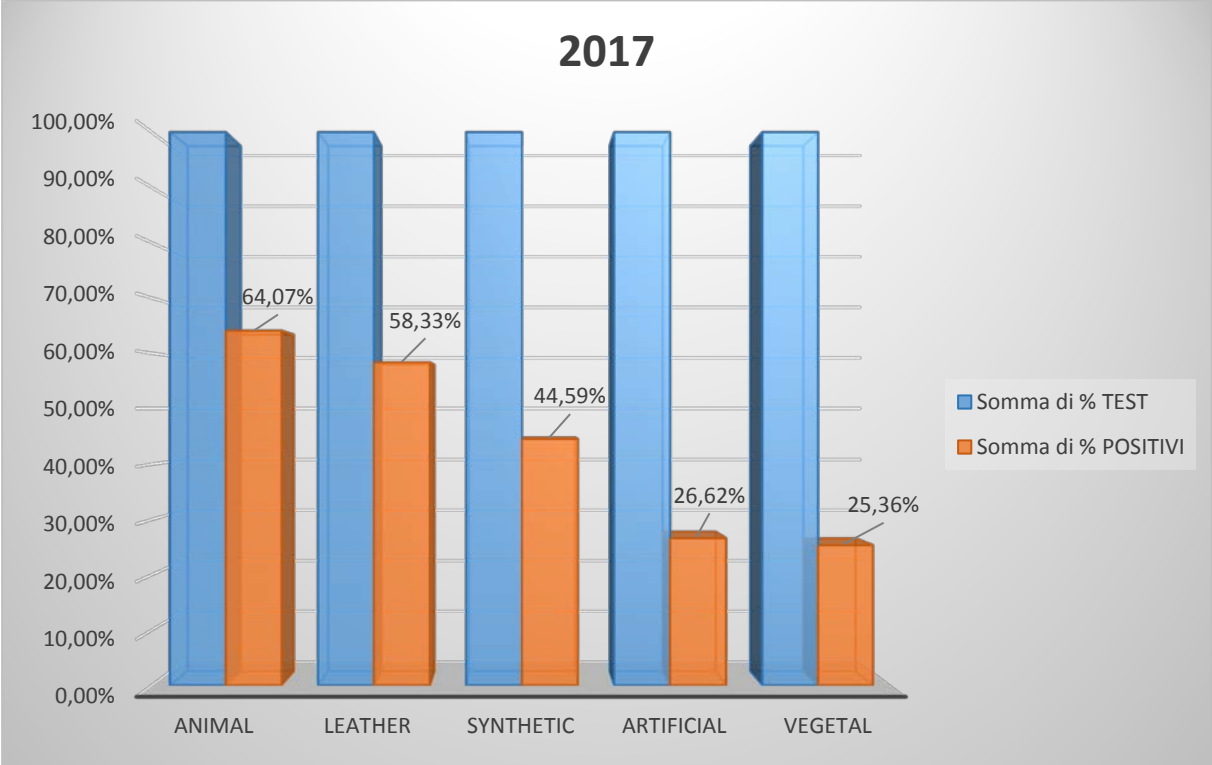
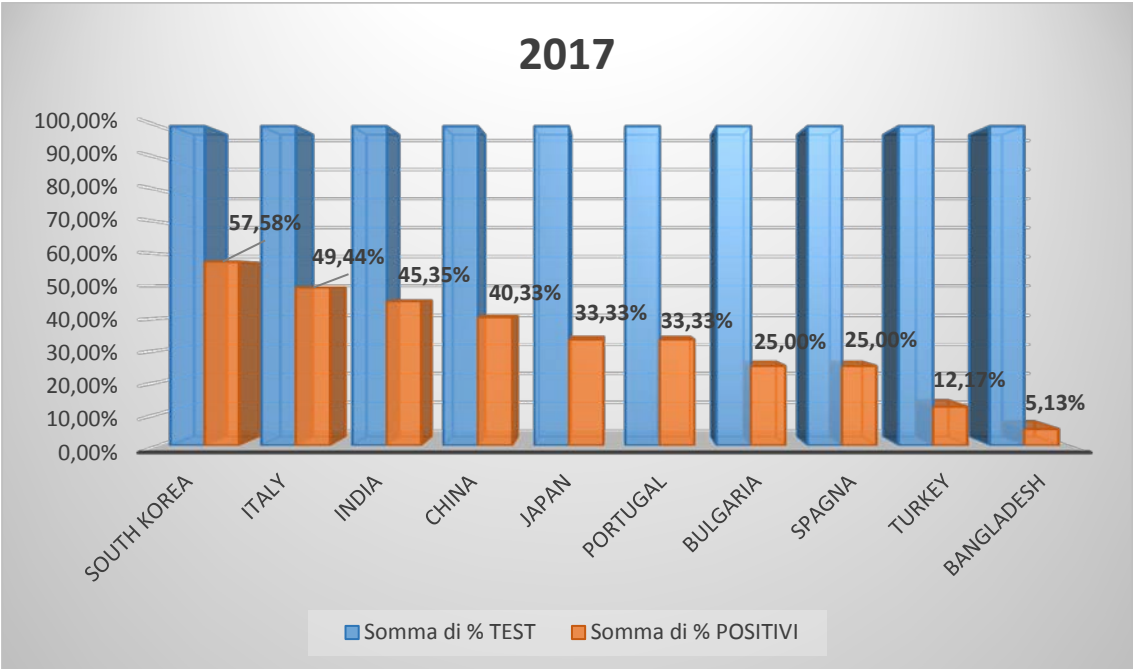


Figure 2 Types of Fibers 2017

In *Figure 3* the APEOs' concentration is identified by country. The following graph lists the countries with highest amount of tests. It can be clearly observed the percentage of fail tests in each country.

Some of the most important countries show a meaningful changes from 2015 and 2016, important to be highlited:

- SOUTH COREA: test show a significante rise of the percentage of failed tests. From 32% in 2015 to 21% in 2016 to 57% in South Corea.
- ITALY: tests show a rise of the percentage of failed tests. From 28% in 2015 to 42% in 2016 to 49% in 2017;
- INDIA: tests show a rise of the percentage of failed tests. From 41% in 2015 to 48% in 2016 to 45% in 2017;
- CHINA: tests show a constant improvement since 2015. From 60% in 2015 the failed tests has been lowered to 45% in 2017, so far;
- However, it is important to underline that the amount of established test is 18 tests.



*Figure 3* APEOs concentration divided by country in 2017

We are considering, as an acceptance limit, 1 mg/kg APEOS concentration. All the samples having an APEOS concentration greater than that have to be considered as failed.

FAILED percentage is about 35.5 in 2017%.

Figure 4 as said before, every test having a higher level of concentration than 1 mg/kg is considered failed. However, it is significant to divided the concentration of APEOs in different ranges.

This graph is one of the most important during this test analysis. It underlines the improvmet achieved by Miroglia Fashion. It is important to focus on the improvement point.

First of all, the concentration above 100 has decreased to 2% (3% in 2016). Moreover, the value between 10 and 50 has as well decreased to 10% from 12 in 2016%.

It means that in total 86% (63% + 22%) of the tests are below 10. In three years, Miroglia Fashion has passed from 80% (<10) to 86% (<10) in 2017. Decreasing the cricital values above 50 from 7% in 2015 to 4% in 2017 (figure 5/6/7).

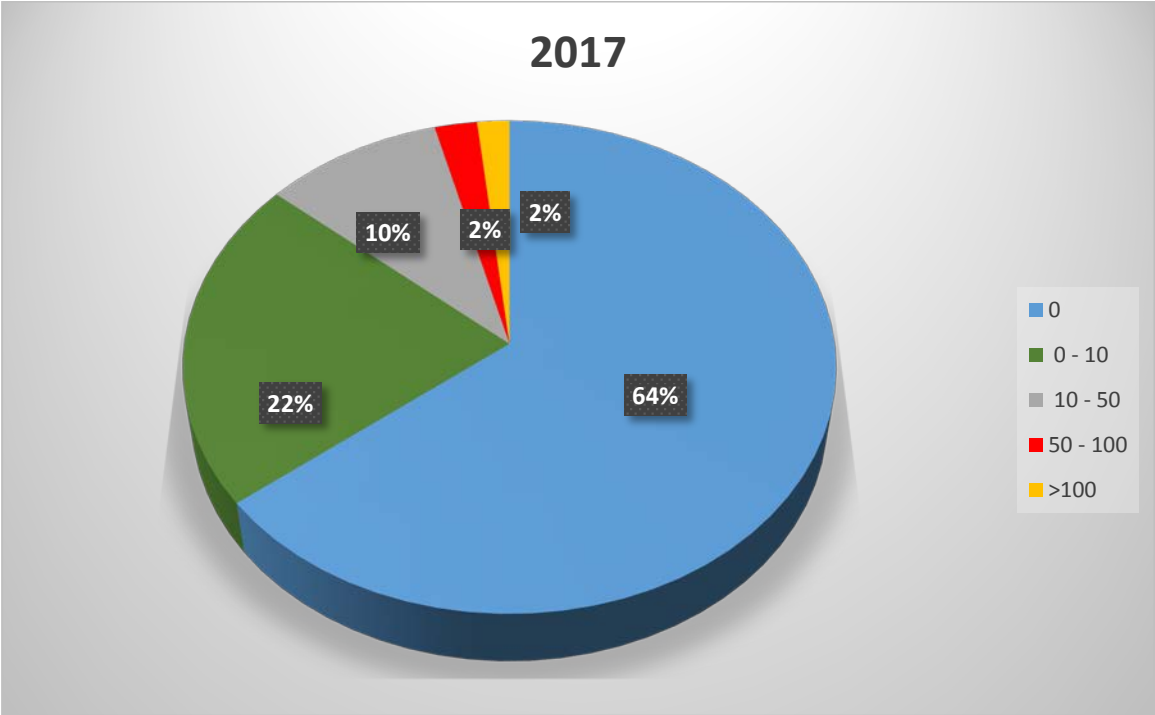


Figure 4 APEOs concentration 2017

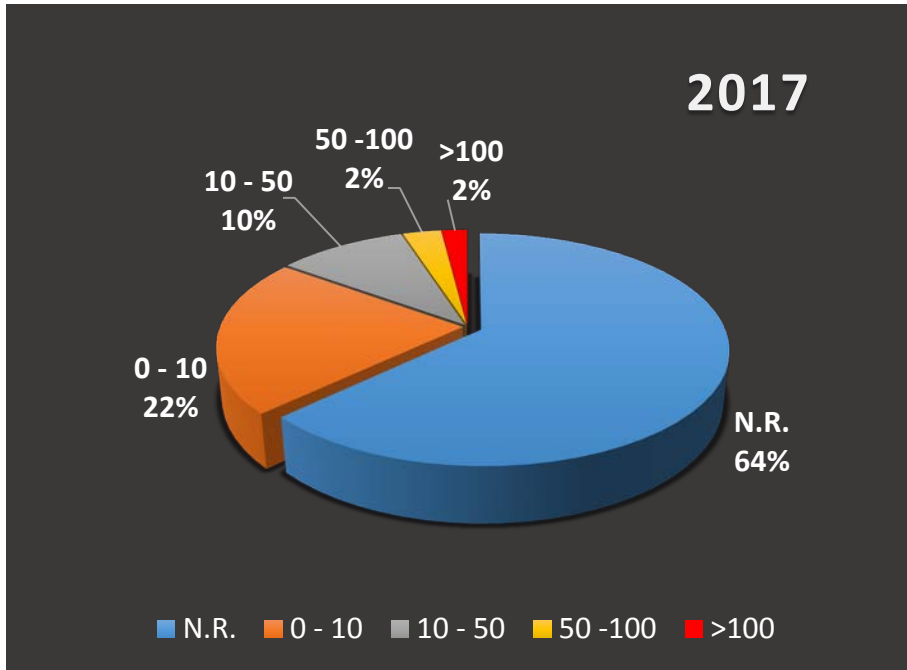


Figure 5

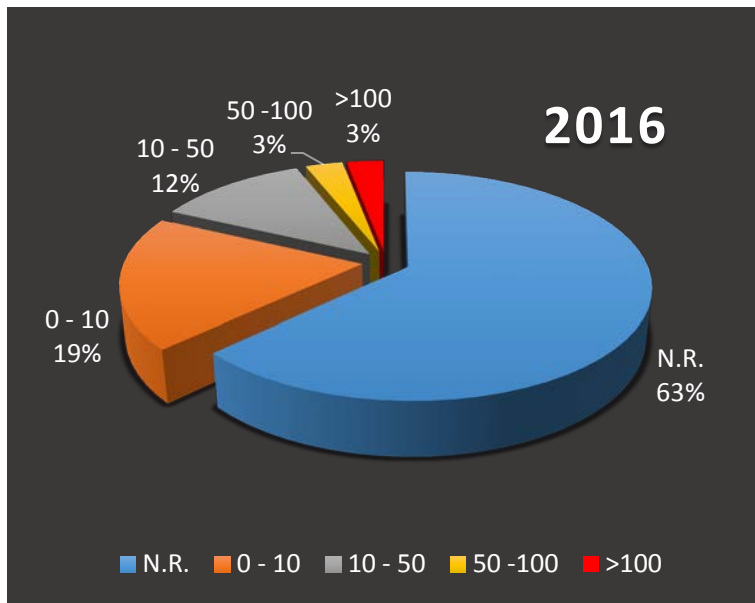


Figure 6

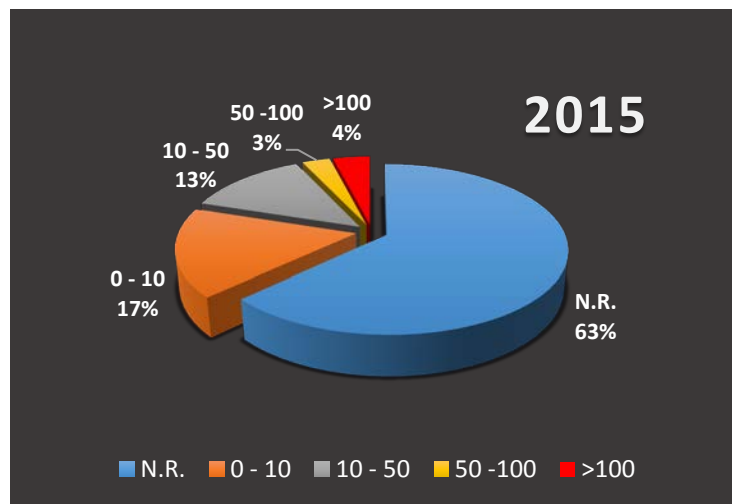


Figure 7

## **CONCLUSION**

The screening remarked a great improvement over the last few years. This situation pointed out that improvement throughout the whole supply chain, especially for wet process. Major criticalities have to be found in chemical formulation and raw materials.

Miroglio Fashion will continue with the same activities as in the past few years.

In details:

- Information and formation for all the supply and sub-supply chain to reach the fixed goals.
- Creation of an audit program at production structures of supply chain, paying a special attention to wet process.
- Review of M-RSL and P-RSL inputing quantification limits according to the best technologies available.
- Verification of chemical formulations containing APEOS (also in a contamination level) still used in order to find out alternative substances which can guarantee the same performance standards.