

O13. ORGANIC COLORANTS IN TATTOO INKS – HOW TO CHECK COMPLIANCE WITH THE EUROPEAN RESOLUTION

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Introduction: The CoE Resolution ResAP(2008)1 restricts the use of organic pigments in tattoo inks. Colorants listed in annex 2 of the CoE Resolution and restricted colorants in annex IV of the Cosmetics Regulation are forbidden as well as those that may split into carcinogenic primary aromatic amines (PAA). In the last years, Swiss studies revealed high proportions of noncompliance regarding the use of colorants.

Discussion: Because of their poor solubility and chemical variety, several different methods are needed for checking the compliance of tattoo colorants:

Laser desorption-Time of Flight-MS (LDI-ToF) is predestined for the determination of pigments because the analytes don't have to be solubilised. Matrix effects and differing sensitivity between pigments limit its use as a comprehensive method though.

UV/VIS-spectrometry after dilution with strong solvents reveals the main colorants but the selectivity of the method is not adequate for an unequivocal identification of all pigments.

Liquid chromatography (LC) coupled to Ultraviolet/Visible (UV/VIS) or Mass spectrometric (MS) detection is very selective and detects the main and tinting colorants as well as the impurities. Because only LC compatible solvents may be used, some pigments cannot be determined.

Thin layer chromatography (TLC) allows for the use of strong solvents and reveals the whole pigment pattern. Migration is not always achieved though and separation not as selective as with LC.

At last, the determination of those pigments that may split into carcinogenic primary aromatic amines needs an indirect, harmonised method that suffers from the poor solubility of the pigments in combination with the aqueous reduction conditions.