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SAFETY ASSESSMENT OF THE ANALYZED JEWELRY CONCERNING NICKEL MIGRATION ON THE SERBIAN MARKET

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The aim of this work was to assess the safety of jewelry concerning nickel migration, having in mind that this metal causes allergic contact dermatitis. The safety assessment was in line with REACH Directive, regulated by the Rulebook on Restrictions and Prohibitions on Production, Marketing and Use of Chemicals. The reference method for testing the release of nickel from all components that are placed in pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin is defined by the standard SRPS EN 1811:2016. Test involves pre-immersing the sample in a migratory sweat solution (pH of 6.5 ± 0.05) for 7 days at 30 0C. Nickel content in migratory solution of sweat is determined by ICP-OES technique (1). Maximum permitted amount of nickel released from products placed in pierced parts of human body must not exceed 0.2 μg/cm2 per week, and in products intended for direct and prolonged contact with skin 0.5 μg/cm2 per week (2). Among 200 analyzed jewelry samples in the last 5 years, it was found that 10% did not satisfy the safety criteria concerning nickel migration. Most of the analyzed jewelry samples met the safety criteria set by the national regulations and standards. However, it is worrying that there is still a significant number of samples that do not meet this criteria, knowing that criteria for nickel migration from jewelry was set on 30th June 1994 by the amendment to Directive76/769/EEC, which precedes REACH Directive.

References

1. SRPS EN 1811: 2016 - Reference test method for the release of nickel from all components which are placed in pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin
2. Rulebook on restrictions and prohibitions on the production, placing on the market and use of chemicals ("Official Gazette of RS", No. 90/2013, 25/2015, 2/2016, 44/2017, 36/2018 and 9/2020)

PROCENA BEZBEDNOSTI ANALIZIRANOG NAKITA U POGLEDU MIGRACIJE NIKLA NA TRŽIŠTU SRBIJE

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Rad obuhvata analizu bezbednosti uzoraka nakita u pogledu migracije nikla zbog opšteg trenda nošenja nakita kao ukrasa na telu i u probušenim delovima tela, kao i činjenice da je nikl uzročnik alergijskog kontaktnog dermatitisa. Procena bezbednosti je usaglašena sa REACH Direktivom i regulisana je Pravilnikom o ograničenjima i zabranama proizvodnje, stavljanja u promet i korišćenja hemikalija. Referentna metoda ispitivanja oslobađanja nikla iz svih sastavnih delova koji se postavljaju u probušene delove ljudskog tela i artikala predviđenih da dođu u direktan i duži kontakt sa kožom definisana je standardom SRPS EN 1811:2016. Ispitivanje obuhvata predhodno potapanje uzorka u migracioni rastvor znoja pH vrednosti 6,5 ± 0,05 tokom 7 dana na 30 ^{0}C. Sadržaj nikla u migracionom rastvoru znoja određuje se tehnikom ICP-OES (1). Maksimalno dozvoljena količina oslobođenog nikla u proizvodima koji se stavljaju u probušene delove ljudskog tela mora biti manja od 0,2 μg/cm^2 nedeljno, a u proizvodima koji su namenjeni direktnom i dugotrajnom dodiru sa kožom ne sme biti veća od 0,5 μg/cm^2 nedeljno (2). Među oko 200 analiziranih uzoraka nakita u poslednjih 5 godina ustanovljeno je da je 10% bilo neispravno zbog povećane migracije nikla. Najveći broj analiziranih uzoraka nakita zadovoljio je postavljene kriterijume bezbednosti zadate važećim nacionalnim pravilnicima i standardima. Međutim, zabrinjavajuće je da i dalje postoji značajan broj uzoraka koji ne zadovoljava postavljene kriterijume, s obzirom da su kriterijumi za migraciju nikla iz nakita postavljeni još amandmanom Direktive 76/769/EEC 30. juna 1994. godine koja je preteča REACH Direktive.

Literatura

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2. Pravilnik o ograničenjima i zabranama proizvodnje, stavljanja u promet i korišćenja hemikalija("Sl. glasnik RS", br. 90/2013, 25/2015, 2/2016, 44/2017, 36/2018 i 9/2020)