Fluorinated Compounds in North American Cosmetics*


Abstract

Per- and polyfluoroalkyl substances (PFAS) are anthropogenic chemicals. Known for oil and water-repellent properties. Persistent and mobile. >4700 types of PFAS, most unregulated. Used in non-stick pans, textiles, fire-fighting foams, food packaging, cosmetics. Study Aims:
1. Determine occurrence of PFAS in cosmetics
2. Evaluate relationship between PFAS presence and disclosure, or lack thereof, on ingredient labels

Methods

- 214 cosmetic products from U.S. and 17 from Canada, including mascara, foundation, lipstick and others
- Samples analyzed for total F using PIGE spectroscopy
- 29 products (including 20 with high total F) selected for targeted LC and GC analysis of $\Sigma_{53}$ PFAS

Results & Discussion

Key findings:
1) Foundations had highest median total F; mascaras had largest range of total F
2) $\Sigma_{53}$ PFAS conc. up to 10,500 ng/g
3) Only 8% of samples had PFAS ingredients listed

Take-home:
Avoid cosmetics marketed as: “long lasting” “waterproof” “wear-resistant”

Fig. 1: Total fluorine measured by PIGE