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The Dangers of Fluorinated Ski Waxes

Winter is often associated with skiing. To practice this sport, many people apply wax under their skis (or their snowboard) to slide better on slopes and to have a better skiing experience. Last year, a ban on fluorinated waxes was announced by the International Ski Federation council for implementation in the summer of 2021. Many questions have arisen with this new regulation: why was fluoride added to natural wax, what are the main issues caused due to this addition and what are the impacts of the ban on the end user. In this article, I will answer these questions and suggest an ecological replacement for waxing skis.

Glide wax (or fast wax) is used to minimize the friction with the snow for both alpine and cross-country skiing. Traditionally, waxes are composed of solid hydrocarbons (such as paraffin). In the case of high-performance waxes, they also contain fluorine to achieve lower friction and high-water repellency than that which is achieved by pure wax alone. Waxes enriched with fluorocarbons or polyfluoroalkyl substances (PFAS) have the Teflon effect. It makes the surface coated with this wax barely stick to the snow, thus increasing the desired sliding effect. On the other hand, the addition of PFAS have negative effects on the environment and on humans. In 2010, after the world's biggest Nordic ski contest, scientist tested the snow and soil and found them tainted with fluorocarbons, which have been also linked to cancers and liver damage.

The Stockholm restrictions on the production and use of PFAS (see article in ASEQ-EHAQ newsletters, August 2020 for more details), bans their use in international competitions. However, according to a notice from the Federation, the



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implementation of the fluoro wax ban may take years to implement. To help in the transition, the Federation will be decreasing fluoro thresholds progressively. Most wax companies have long been aware of this new regulation and have prepared for it. They now produce a more environmentally friendly wax that skiers can use.

Although being more environment and health-friendly, a negligible consequence of this regulation could result in increased costs in the sport of skiing. There are some alternatives on the market such as DOMINATOR's line of elite ski racing waxes which utilizes a new technology known as HYDROPEL. This is a family of polymers developed to replace fluorine by mimicking water repellency and friction reduction without using harmful substances.

Online links:

- Cross-Country Skiing's Dirty Little Fluorinated Secret, by Bill Donahue, Bloomberg businessweek, published on August 28th 2019, <https://www.bloomberg.com/news/articles/2019-08-28/cross-country-skiers-are-addicted-to-banned-fluoro-wax>
- What's the deal with fluoro wax?, by Sean Higgins, Ski racing media, published on September 20th 2019, <https://skiracing.com/whats-the-deal-with-fluoro-wax/>
- Future without fluoros: a complete guide, by Mackenzie Moran, Ski racing media, published on July 29th 2020, <https://skiracing.com/future-without-fluoros-a-complete-guide/>
- FIS fluoro wax ban – does it have a point?, ZIPP Skiwachse, Skiing and lugging top athletes, publication updated on October 10th 2020, <https://www.skiwachs.com/en/skiing-and-lugging-top-athletes/fis-fluoro-wax-ban>
- Ski wax, Wikipedia, the free encyclopedia, last modification made on October 15th 2020, https://en.wikipedia.org/wiki/Ski_wax