

# **An exploratory study of fibre microplastics pollution in different process stages of salt production by solar evaporation in Spain**

C. Morales Polo; C. Sanchez Mata; J. Calzada Funes; K. Hueso Kortekaas; M.M. Cledera Castro; N. Delgado Mellado; R. Caro Carretero

## **Abstract-**

**Microplastics are a pollutant of growing concern. Several studies have found microplastics in table salt worldwide in the last decade, although most have focused on already prepackaged salt. To the best of our knowledge, there is no previous research analysing the entire salt production process. In this study focused on solar evaporation salinas, brine and salt samples were obtained from each stage of production, starting with the entrance of seawater/brine until the final stage of ready-to-sell salt, in six sites in Spain. We extracted microplastics from each sample after 30% H<sub>2</sub>O<sub>2</sub> digestion and filtration through cellulose nitrate 5 µm pore filters. Microplastic fibres were optically analysed with an Olympus DSX1000. Results indicate that microplastics are present both in seawater and air, with atmospheric fallout identified as the primary source. Microplastic concentrations from the entrance to the salina till the inlet to the crystallizers ranges from 256 to 1500 items per liter and from 79 to 193 microplastics per kg for packaged salt were estimated. Artisanal salina F shows the highest content in microplastics. This study hopes to give insight into the origin and causes of microplastic pollution in solar evaporation salinas and contribute to preventing this form of pollution in food-grade salt.**

**Index Terms-** Microplastics; Food-grade salt; Brine; Quality; salinas

Due to copyright restriction we cannot distribute this content on the web. However, clicking on the next link, authors will be able to distribute to you the full version of the paper:

[Request full paper to the authors](#)

If your institution has an electronic subscription to Heliyon, you can download the paper from the journal website:

[Access to the Journal website](#)

## **Citation:**

*Calzada-Funes, J.; Caro, R.; Cledera-Castro, M.M.; Delgado-Mellado, N.; Hueso-Kortekaas, K.; Morales-Polo, C.; Sanchez-Mata, C. "An exploratory study of fibre microplastics pollution in different process stages of salt production by solar evaporation in Spain", Heliyon, vol.10, no.11, pp.e31609-1-e31609-15, June, 2024.*