

Title: **Analytical methods for the determination of Dechlorane Plus and its related compounds: a review.**

Student: Jordi Ocampo González

Date: September 2020

Supervisor/s: Dr. Francisco Javier Santos Vicente

Departament de Enginyeria Química i Química Analítica

Dechlorane Plus (DP), its syn- and anti- isomers, and its related compounds (Dec-602, Dec-603, Dec-604, and Chlordene Plus, CP), constitute a group of polychlorinated nonbornene flame retardants used for decades in a wide variety of products as additives in order to improve their characteristics. They are generally a group of high stability non-polar compounds with physical and chemical properties that raise concern due to their persistence in the environment, long-range transport, ability to bioaccumulate and biomagnify, and cause potential adverse effects to the environment and living beings. Is for this reason that DP is currently in the spotlight of the international community since the United Nations Environment Programme Governing Council proposed it and its isomers as new candidates to the list of Persistent Organic Pollutants (POPs).

In the present work, a review of the prevalent methods for determining DP and its related compounds and also a detailed profile of DP, its characteristics, behaviours, production, and environment occurrence was accomplished by performing bibliographic research using scientific databases. The used methods are generally based on gas chromatography coupled to mass spectrometry with electron-capture negative ion as ionisation mode (GC-ECNI-MS), with significant differences in the sample preparation depending on the matrix and slight differences in the determination methods.

Keywords: Dechlorane Plus, polychlorinated nonbornene flame retardants, persistent organic pollutants, environment pollutants, electron-capture negative ionisation, gas chromatography-mass spectrometry, analytical methods.