Published on *The National Law Review* https://natlawreview.com

California Adopts Definition of Microplastics in Drinking Water

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In accordance with deadlines set in 2018 legislation, the California State Water Resources Control Board (Board) has adopted a definition for "microplastics" that will be used in testing of drinking water for microplastics. The Board was required, on or before July 1, 2020, to adopt a definition of microplastics in drinking water and, on or before July 1, 2021, will be required to adopt requirements for testing and reporting on microplastics in drinking water, among other things. While this development is currently focused on the testing of drinking water in California, the Board and others expect that it will form the basis of future efforts to quantify and address microplastics in the environment.

Context

Microplastics are generated through intentional addition to products (e.g., microbeads in personal care products), incidental generation as products are used (e.g., microfibers from the laundering of synthetic textiles in clothing), and by the breakdown of plastic litter in the environment. Regardless of their source, because of their size and ubiquity, microplastics often end up in the water or the environment more broadly. As a result, microplastics are increasingly the subject of research and public concern, drawing attention from federal legislators and international bodies.

Consistent with this heightened interest, in 2018, the California legislature adopted Senate Bill 1422 (SB 1422), which required the Board, on or before July 1, 2020, to adopt a definition of microplastics in drinking water. SB 1422 also requires the Board, on or before July 1, 2021, to take the following actions:

- Adopt a standard methodology for testing drinking water for microplastics;
- Adopt requirements for four years of testing and reporting of microplastics in drinking water, including public disclosure of the results;
- Consider, if appropriate, issuing a notification level or other guidance to aid consumer interpretation of the testing results; and
- Accredit qualified laboratories in California to analyze microplastics.

SB 1422 complements Senate Bill 1263's requirement that the state's Ocean Protection Council adopt and implement a Statewide Microplastics Strategy by December 31, 2024, with the strategy to initially be submitted to the legislature by December 31, 2021. Together, the two bills have led the Board, along with other government agencies and interested parties, to work on an international effort to standardize methods for monitoring microplastics in drinking water, as well as surface water, sediment, and fish tissue.

Definition of Microplastics in Drinking Water

The Board adopted the definition as proposed, which provides:

'Microplastics in Drinking Water' are defined as solid[1] polymeric materials[2] to which chemical additives or other substances may have been added, which are particles[2] which have at least three dimensions that are greater than 1nm and less than 5,000 micrometers (µm)[3]. Polymers that are derived in nature that have not been chemically modified (other than by hydrolysis) are excluded.

[1] 'Solid' means a substance or mixture which does not meet the definitions of liquid or gas. 'Liquid' means a substance or mixture which (i) at 50 degrees Celsius (?C) has a vapor pressure less than or equal to 300 kPa; (ii) is not completely gaseous at 20 ?C and at a standard pressure of 101.3 kPa; and (iii) which has a melting point or initial melting point of 20 ?C or less at a standard pressure of 101.3 kPa.

'Gas' means a substance which (i) at 50 ?C has a vapor pressure greater than 300 kPa (absolute); or (ii) is completely gaseous at 20 ?C at a standard pressure of 101.3 kPa.

[2]'Polymeric material' means either (i) a particle of any composition with a continuous polymer surface coating of any thickness, or (ii) a particle of any composition with a polymer content of greater than or equal to 1% by mass.

'Particle' means a minute piece of matter with defined physical boundaries; a defined physical boundary is an interface.

'Polymer' means a substance consisting of molecules characterized by the sequence of one or more types of monomer units. Such molecules must be distributed over a range of molecular weights wherein differences in the molecular weight are primarily attributable to differences in the number of monomer units. A polymer comprises the following: (a) a simple weight majority of molecules containing at least three monomer units which are covalently bound to at least one other monomer unit or other reactant; (b) less than a simple weight majority of molecules of the same molecular weight. 'Monomer unit' means the reacted form of a monomer substance in a polymer. 'Monomer' means a substance which is capable of forming covalent bonds with a sequence of additional like or unlike molecules under the conditions of the relevant polymer-forming reaction used for the particular process.

[3] Size-based nomenclature for plastic particles with dimensions within the criteria for 'microplastics in drinking' as well as larger particles outside the threshold dimensions are as follows: "nanoplastics" (1 nm to