

State Water Resources Control Board

Proposed Definition of ‘Microplastics in Drinking Water’*

‘Microplastics in Drinking Water’ are defined as solid¹ polymeric materials² to which chemical additives or other substances may have been added, which are particles² 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.

*Evidence concerning the toxicity and exposure of humans to microplastics is nascent and rapidly evolving, and the proposed definition of ‘Microplastics in Drinking Water’ is subject to change in response to new information. The definition may also change in response to advances in analytical techniques and/or the standardization of analytical methods.

‘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 ($^{\circ}\text{C}$) has a vapor pressure less than or equal to 300 kPa; (ii) is not completely gaseous at 20 $^{\circ}\text{C}$ and at a standard pressure of 101.3 kPa; and (iii) which has a melting point or initial melting point of 20 $^{\circ}\text{C}$ or less at a standard pressure of 101.3 kPa.

‘Gas’ means a substance which (i) at 50 $^{\circ}\text{C}$ has a vapor pressure greater than 300 kPa (absolute); or (ii) is completely gaseous at 20 $^{\circ}\text{C}$ 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.

³Size-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 <100 nm); “sub-micron plastics” (100 nm - <1 μm); “small microplastics” (1 μm to < 100 μm); “large microplastics” (100 μm to <1 mm); “mesoplastics” (1 mm to <2.5 cm); “macroplastics” (>2.5 cm).