Few-layered black phosphorus to an aquatic unicellular organism

QI WU, GUANGBO QU

State Key Laboratory of Environmental Chemistry and Ecotoxicology, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, 100085, China

With the potential continuous application of few-layered black phosphorus (BP) in various fields, including electronic, photonic, therapeutic and environmental fields, the possible environmental safety of BP on aquatic organisms is becoming a great concern. In the current study, we evaluated the toxicity of BP on *Tetrahymena thermophila* (*T. thermophila*). After the exposure within 24 h, the population of *T. thermophila* significantly decreased by 46.3% in exposure group. Cell membrane and cilium damage were observed by scanning electron microscopy (SEM) upon treatment with BP. The engulfment of BP by *T. thermophila* was oral apparatus dependent, through which intracellular BP was then transported to the posterior end of *T. thermophila* by food vacuole packaging.