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Direct measurement of cell concentrations in bubble films prior to rupture PETER WALLS, JAMES BIRD, Boston Univ — Pathogens or other solid particulates suspended in a liquid can attach to the interface of a bubble as it rises to the surface. When the bubble eventually ruptures at the free surface, these particulates can be ejected into film or jet droplets, such as those linked to the respiratory irritation experienced by shoreline residents during red tide events. Previous studies have demonstrated that the particulate concentration in these aerosols can be significantly higher than in the original liquid. However, the evolution from enriched film to enriched droplets is not entirely understood. Here we develop a physical model for the concentration enrichment by considering the concentration of particulates in the bubble film. In addition, we experimentally measure particulate concentration in the bubble film prior to rupture. The observed concentrations are consistent with the developed model.

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