Let $X$ and $Y$ be varieties over a field $k$, and let $Z = X \times_k Y$ be their fiber product. In this talk, we consider the question of how singularity and multiplicity theories of $Z$ can be understood from those of $X$ and $Y$. Specifically, our focus will be on the Castelnuovo-Mumford regularity and depth of symbolic and regular powers of their defining ideals.