In Part 1 of this paper a model was developed to describe the formation mechanisms and dynamic behavior of cutting fluid mist. This part of the paper focuses on an experimental investigation of the mist generated by the interaction of the fluid with the rotating cylindrical workpiece during a turning operation and the simulation of the dynamic behavior of the mist droplets, resulting in the prediction of the droplet size distribution and the mass concentration within the machining environment. These simulation results are compared to experimental measurements in order to validate the theoretical model presented in Part 1 of the paper. It is observed that the model predictions accurately characterize the observed experimental behavior.