Response to “Dr. Luca Giannini’s Letter to the Editor”

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We thank Dr. Luca Giannini for his interest in our article and for his thoughtful comments. Here we would like to provide some explanations.

In our study (Ling et al. 2011), we adopted the experimental data (Kuhlbusch et al. 2004) to reconstruct the carbon black (CB) nanoparticles (CB-NPs) concentration during propane forklift use in CB plants and assess the potential exposure risk in CB plants due to workers who may be exposed to part of CB-NPs. The CB-NPs exposure data of number size distributions were during forklift (propane fuel) operation near the sampling instrumentation. The number size distribution was increased in the particles size range 20–50 nm aerodynamic diameter as well as in the $>1\text{-}\mu\text{m}$ particle size range. The particles in the nanoscale size range emission may be attributed to the forklift activity. Similarly, Wang et al. (2010) demonstrated that the CB-NPs size distributions for packaging, warehouse, and pelletizing area in CB manufacturing plant exposure were consistently in the form of bimodal. The first mode (count median diameter, 24.2–39.2 nm) could

be contributed not only by the process emissions but also by the forklift exhaust or fugitive emissions of heaters, especially in the warehouse and pelletizing area. The second mode (count median diameter, 124–166 nm) was mainly from the CB-NPs emissions from the process areas. Wang et al. (2010) also emphasized that CB, forklift exhaust, and heater fugitive are carbon-containing materials; therefore, it is very difficult, if not impossible, to measure each individual concentration of these three pollutants. Even so, based on the very conservative assumptions in our study, we adopted the experimental data (Kuhlbusch et al. 2004) to assess the potential exposure risk in CB plants due to workers who may be exposed to part of CB-NPs in the bag filling areas in the CB plants.

We deeply appreciate Dr. Luca Giannini for giving us an opportunity for clarifying the assumption in our study. The purpose of this study (Ling et al. 2011) was trying to assess the potential exposure risks for workers in the workplace exposed to airborne NPs and develop the risk management control strategies for the NP engineering workplace.

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