Industrywide Exposure Assessment Studies on Carbon Nanotubes and Nanofibers: Images and Scenarios from the Field

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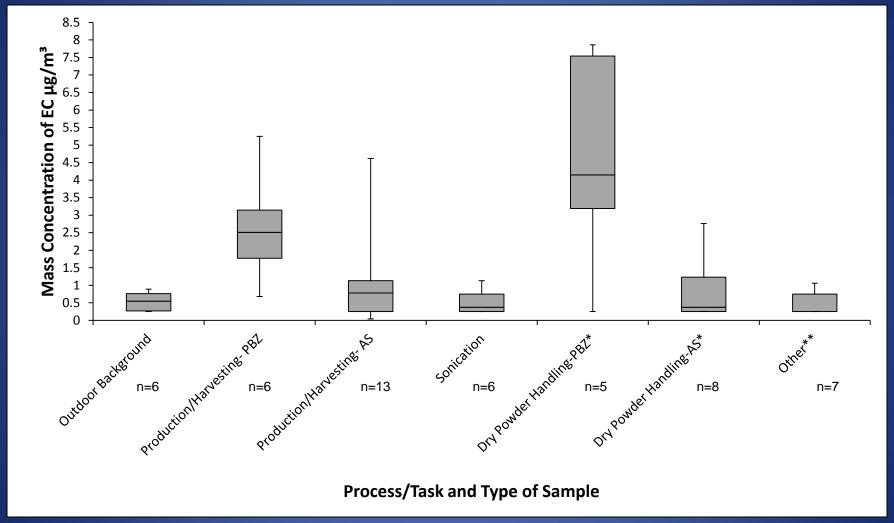
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EC Exposures by Process and Type of Sample



^{*} Tasks include: Weighing; Extrusion, Weighing and Batch Mixer Use; Transferring CNFs; Weighing, Mixing and Sonication of CNTs and CNFs.

**Tasks include: CNT Waste Collection; General Office Work; Milling CNT Composite; Sieving and Spray Coating, Included AS and PBZ samples.







Dry Powder Handling Scenarios



Process: Extrusion

Task: Weighing MWCNT

Volume: 1 kg

Duration of Sample: 112 min

Exposure Concentration=

 $3.19 \, \mu g/m^3$



Process: Wet Shipping

Task: Weighing MWCNT

Volume: 7.7 kg

Duration of Sample: 269 min

Exposure Concentration=

 $0.3 \, \mu g/m^3$



Process: Resin Formulation

Task: Weighing CNF/MWCNT

Volume: 100-200 g

Duration of Sample: 178 min

Exposure Concentration=

 $7.54 \, \mu g/m^3$







CNT Production/Harvesting Scenarios





Process: MWCNT Production

Task: Harvesting MWCNTs

Volume: 20-30 g

Duration of Sample: 46 min

Exposure Concentration=

 $1.95 \, \mu g/m^3$

Process: MWCNT Production

Task: Harvesting MWCNTs

Volume: 50-100 g

Duration of Sample: 273 min

Exposure Concentration=

 $0.84 \, \mu g/m^3$







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