**Work Tasks as Determinants of Respirable and Inhalable Indium Exposure among Workers at an Indium-Tin Oxide Production and Reclamation Facility,”**

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Supplementary Material

Supplementary Table S1. Task groups for tasks recorded in task diaries

| **Task Group** | **Sum Hours, Respirable Samples** | **Sum Hours, Inhalable Samples** | **Tasks Included** |
| --- | --- | --- | --- |
| Add chemical | 3.35 | 2.2 | Add antifoamer agent to ITO slip |
| Making caustic solution and adding to dissolution tank |
| Admin | 214.9 | 65.1 | Administrative office |
| Paperwork |
| Blast | 1.67 | ─ | Bead blast tiles in planar bond |
| Bonding tasks | 50.4 | 29.5 | Bond |
| Debond |
| Load backing tube |
| Unload backing tube |
| Coat plates |
| Cutting |
| Melt indium in a pot |
| Wetting cylinder with molten indium |
| Wetting titanium backing tube |
| Break | 20.6 | ─ | Break and lunch |
| Cast, No Indium | 7.7 | 6.6 | Pour plaster of paris into molds |
| Cast, Indium | 1.7 | 0.1 | Pour bars from crucible |
| Casting Sidework, ITO | 18.8 | 9.5 | Attach hoses to molds |
| Remove wooden frame from mold |
| Prepare molds in wooden frame |
| Remove hoses from molds |
| Unload ingots from mold |
| Flip molds down |
| Clean Object, Indium | 13.4 | 5.9 | Clean cylinder or tile |
| Clean Object, No Indium | 7.7 | 0.3 | Clean mold or setter, no indium |
| CleanFl | 57 | ─ | Clean floors |
| Demold | 24.8 | 10.8 | Demold |
| Unwrap tiles |
| Dissolution | 24.8 | 2.1 | Dissolution |
| Load dissolution tanks/unload |
| Unload reactor |
| Dry Oven | 7.8 | 1.5 | Dry mold/setter |
| Load/unload drying ovens |
| Operate drying oven |
| Handling Indium Materials | 7.1 | 4.1 | Material Handling |
| Heating | 10.1 | 0.7 | Plasma torching |
| Preheat |
| In Plant | 94.1 | 3.9 | Walking from one area to another in plant |
| Inspect | 49.3 | 36.9 | Inspection |
| Liquid to Powder | 1.9 | 1.9 | Operate centrifuge |
| Liquid Transfer | 17.2 | 7.0 | Collect slip sample |
| Pour/mix slip |
| Pump slip to molds |
| Transfer slip between mixer |
| Operate Furnace Tasks | 8.0 | 1.3 | Unload furnaces |
| Load calcining furnaces |
| Stack ITO for kiln |
| Load kiln |
| Maintenance | 42.1 | 21.9 | Maintenance |
| Repair centrifuge |
| Machining | 49.0 | 17 | Operate grinder |
| Operate PTC saw |
| Operate surface grinder |
| Operate wet saw |
| Roughing diamond grinding wheel |
| Melt Indium | 19.2 | 5.2 | Shot production |
| Skim dross from crucible |
| Miscellaneous, No Indium | 177.7 | 71 | Mix plaster and water |
| Apply soap |
| Load truck |
| Unload truck |
| Deliver |
| Change coolant |
| Prepare mold |
| Sawing, no indium |
| Sputter tile |
| Vacuum out mold |
| Wash hoses/buckets/equipment |
| Wash filter press |
| Monitor | 23.9 | 22.4 | Monitoring equipment |
| Move Rack | 3.8 | 2.3 | Moving racks of unsintered tiles |
| Package | 10.7 | 7.7 | Vacuum seal tiles in bag |
| Open boxes |
| Pack boxes |
| Packaging/labelling |
| Powder Fraction, Reclaim | 4.6 | 1.9 | Blend (rotate tote) |
| Operate ball mill |
| Powder Fraction, All Other  (ITO, Refinery, R&D) | 4.6 | 2.0 | Blend (rotate tote) |
| Operate ball mill |
| Crush |
| Powdering |
| Powder Transfer, ITO | 9.7 | 1.8 | Operate spray dryer |
| Unload ball mill and load mixer |
| Load/unload blender |
| Sieve/Screen |
| Load ball mill/attritor |
| Unload ball mill/attritor |
| Operate mixer |
| Powder Transfer, Reclaim | 17.5 | 3.3 | Discharge tote to crucible |
| Empty ball mill to tote |
| Fill saggars |
| Load ball mill/attritor |
| Load crucible |
| Load/unload blender |
| Load corn starch to tote |
| Performing Reclaim |
| Powder Transfer, Refinery | 5.8 | 0.2 | Unload filter press |
| Unload centrifuge |
| Fill saggars |
| Powder Transfer, All Other  (R&D, Mold Making) | 6.9 | 3.0 | Operate spray dryer |
| Unload ball mill and load mixer |
| Load ball mill/attritor |
| Unload ball mill/attritor |
| Prep Work | 4.1 | ─ | Prep work in reclaim area |
| Product (ITO) Handling | 42.8 | 24.2 | Apply protective tape |
| Unload PTC saw |
| Load grinder |
| Load PTC saw |
| Measuring density of product samples |
| Unload grinder |
| Measure ITO |
| QC | 39.4 | 11.7 | Milling |
| Test tiles |
| Analyzing samples |
| Prepare sample |
| Making sample mounts |
| Polishing ITO samples |
| Sanding | 13.0 | 0.4 | Sanding |
| Sandblasting |
| Setup | 13.8 | 0.8 | Set-up machine control |
| Weigh | 7.5 | 2.5 | Weigh |
| **Total Hours** | **1329.3** | **446** |  |