**Supplemental Table 1: Forms of beryllium materials encountered during production and characteristics of exposure aerosols by the process or job area where the sample was obtained (adapted from Virji et al., Characteristics of Beryllium to Small Particles at a Beryllium Production Facility, *Annals of Occupational Hygiene*, 2011, 55(1), pp. 70–85, Oxford University Press)**. Since the samples were collected by process type and area, all of the samples do not correspond directly with jobs listed in Figure 1 and Tables 2-3.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Process or job area**  | **Facility** | **Beryllium process materialsA** |  | **Beryllium exposures** |
|  | **Chemical Form** | **Physical form** |  | **Compound** | **SolubilityB** |
| **Beryllium Metal Production** |  |  |  |  |  |  |
|  Wet Plant | A | Be(OH)2(NH4)2BeF4 | Moist powderSalt solution  |  | Be(OH)2(NH4)2BeF4 | PoorSolubleD |
|  Pebbles Plant Fluoride FurnaceC | A | (NH4)2BeF4BeF2 | Salt solutionSolid (glass) |  | (NH4)2BeF4BeF2BeO | SolubleDSolubleDPoor |
|  Pebbles Plant Reduction FurnaceC | A | BeF2Be | Solid (glass)Solid (pebbles) |  | BeF2BeO | SolubleDPoor |
|  Powdering | A | Be | Chips/powder |  | Be | Poor |
|  Machining (High Be) | A | BeBe | Solid (parts)Dissolved in MWF |  | BeBe+2 | PoorSoluble |
|  |  |  |  |  |  |  |
| **Beryllium Oxide Production** |  |  |  |  |  |  |
|  BeO Screener | A | Be(OH)2BeSO4·4H2OBeO | Moist powderSalt solutionPowder |  | Be(OH)2BeSO4·4H2O BeO | PoorSolubleDPoor |
|  Oxide (Product) | A,B | BeO | Powder |  | BeO | Poor |
|  Material Preparation | B | BeO | Powder |  | BeO | Poor |
|  Pressing | B | BeO | Powder |  | BeO | Poor |
|  Sintering | B | BeO | Powder |  | BeO | Poor |
|  Machining  | B | BeO | Powder |  | BeO | Poor |
|  |  |  |  |  |  |  |
| **Beryllium Alloy Production** |  |  |  |  |  |  |
|  Master Alloy Arc Furnace | A | Be(OH)2BeOCuBe | Moist powderPowderMolten/solid (ingot) |  | Be(OH)2BeOBeO | PoorPoorPoor |
|  Casting Alloy Induction Furnace | A | CuBe | Solid (ingot) |  | BeO | Poor |
|  Rod and Wire (Bulk Products) | A,C | CuBeBe | Solid (rod/wire)Dissolved in PS |  | BeBe+2 | PoorSoluble |
|  Strip Operator (Product) | A,C,D | CuBeBe | Solid (strip)Dissolved in PS |  | BeBe+2 | PoorSoluble |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Miscellaneous Production** |  |  |  |  |  |  |
|  Scrap Reclamation | A | BeBeOCuBeBeF2 | Solid (various)Solid (various)Solid (various)Salt solution |  | BeBeOBeBeF2 | PoorPoorPoorSolubleD |
| **Production Support** |  |  |  |  |  |  |
|  R&D/QA and QC | A | BeBeOCuBe | Solid (various)/powderSolid (various)/powderSolid (various)/powder |  | BeBeOBe | PoorPoorPoor |

Be(OH)2 = beryllium hydroxide; (NH4)2BeF4 = ammonium beryllium fluoride; BeF2 = beryllium fluoride; Be = beryllium; Be+2 = dissolved/soluble beryllium; BeSO4·4H2O = beryllium sulfate tetrahydrate; CuBe = copper beryllium; MWF = metal working fluid; PS = pickling solution (acidic or caustic).

A White and Burke (1955); Stonehouse et al. (1992); Stonehouse and Emly (1992).

B Denotes compound solubility (lung and sweat) determined by Finch et al. (1988), Day et al. (2005), Stefaniak et al. (2006, 2011a, 2011b, 2012).

C These processes were not in operation at the time of data collection for this study.

D Inferred from chemical form.