

Supplementary Table 1. IARC carcinogens among the working environment measurement target substances(190) in the Occupational Safety and Health Act

| No | The working environment measurement target substances | CAS Numbers | IARC GROUP |
|-----------------------------------|---|--|------------|
| 1. Chemical Products | | | |
| a) Organic Chemicals (113) | | | |
| 1 | Glutaraldehyde | 111-30-8 | |
| 2 | Nitroglycerin | 55-63-0 | |
| 3 | Nitromethane | 75-52-5 | 2B |
| 4 | Nitrobenzene | 75-52-5 | 2B |
| 5 | p-Nitroaniline | 100-01-6 | |
| 6 | p-Nitrochlorobenzene | 100-00-5 | 3 |
| 7 | Dinitrotoluene | 25321-14-6 | |
| 8 | Dimethylaniline(N,N-Dimethyl-aniline) | 121-69-7 | 3 |
| 9 | Dimethylamine | 124-40-3 | |
| 10 | N,N-Dimethylacetamide | 127-19-5 | |
| 11 | Dimethylformamide | 68-12-2 | 2A |
| 12 | Diethanolamine | 111-42-2 | 2B |
| 13 | Diethyl ether | 60-29-7 | |
| 14 | Diethylenetriamine | 111-40-0 | |
| 15 | 2-Diethylaminoethanol | 100-37-8 | |
| 16 | Diethylamine | 109-89-7 | |
| 17 | 1,4-Dioxane, Diethyl dioxide | 123-91-1 | 2B |
| 18 | Diisobutylketon | 108-83-8 | |
| 19 | 1,1-Dichloro-1-fluoroethane | 1717-00-6 | |
| 20 | Dichloromethane (Methylene chloride) | 75-09-2 | 2A |
| 21 | o-Dichlorobenzene | 95-50-1 | 3 |
| 22 | 1,2-Dichloroethane | 107-06-2 | 2B |
| 23 | 1,2-Dichloroethylene | 540-59-0 156-60-5 | |
| 24 | 1,2-Dichloropropane | 78-87-5 | 1 |
| 25 | Dichlorofluoromethane | 75-43-4 | |
| 26 | p-Dihydroxybenzene | 123-31-9 | 3 |
| 27 | Methanol (Methyl alcohol) | 67-56-1 | |
| 28 | 2-Methoxyethanol | 109-86-4 | |
| 29 | 2-Methoxyethylacetate | 110-49-6 | |
| 30 | Methyl n-butyl ketone | 591-78-6 | |
| 31 | Methyl n-amyl ketone | 110-43-0 | |
| 32 | Methyl amine | 74-89-5 | |
| 33 | Methyl ethyl ketone | 78-93-3 | |
| 34 | Methylethylketone | 78-93-3 | |
| 35 | Methylisobutylketone | 108-10-1 | 2B |
| 36 | Methylchloride | 74-87-3 | 3 |
| 37 | Methylchloroform | 71-55-6 | 3 |
| 38 | 4,4'-Methylene di(bis)phenyl diisocyanate | 101-68-8 | 3 |
| 39 | o-Methylcyclohexanone | 583-60-8 | |
| 40 | Methylcyclohexanol | 25639-42-3 591-23-1(m-) 589-91-3(p-) 583-59-5(o-) | |
| 41 | Maleic anhydride | 108-31-6 | |
| 42 | Phthalic anhydride | 85-44-9 | |
| 43 | Benzene | 71-43-2 | 1 |

Supplementary Table 1. Continued

| No | The working environment measurement target substances | CAS Numbers | IARC GROUP |
|----|---|--------------|------------|
| 44 | 1,3-Butadiene | 106-99-0 | 1 |
| 45 | n-Butylalcohol | 71-36-3 | |
| 46 | 2-Butylalcohol | 78-92-2 | |
| 47 | 2-Butoxy ethanol; | 111-76-2 | 3 |
| 48 | 2-Butoxy ethylacetate | 112-07-2 | |
| 49 | n-Butyl acetate | 123-86-4 | |
| 50 | 1-Bromopropane | 106-94-5 | 2B |
| 51 | 2-Bromopropane | 75-26-3 | |
| 52 | Methyl bromide | 74-83-9 | 3 |
| 53 | Vinyl acetate | 108-05-4 | 2B |
| 54 | Carbon tetrachloride | 56-23-5 | 2B |
| 55 | Stoddard solvent | 8052-41-3 | |
| 56 | Styrene | 100-42-5 | 2A |
| 57 | Cyclohexanone | 108-94-1 | 3 |
| 58 | Cyclohexanol | 108-93-0 | |
| 59 | Cyclohexane | 110-82-7 | |
| 60 | Cyclohexene | 110-83-8 | |
| 61 | Aniline and its homologues | 62-53-3 | 2A |
| 62 | Acetonitrile | 75-05-8 | |
| 63 | Acetone | 78-93-3 | |
| 64 | Acetaldehyde | 75-07-0 | 2B |
| 65 | Acrylonitrile | 107-13-1 | 2B |
| 66 | Acrylamide | 79-06-1 | 2A |
| 67 | Allyl glycidyl ether | 106-92-3 | |
| 68 | Ethanolamine | 141-43-5 | |
| 69 | 2-Ethoxyethanol | 110-80-5 | |
| 70 | 2-Ethoxyethyl acetate | 111-15-9 | |
| 71 | Ethyl benzene | 100-41-4 | 2B |
| 72 | Ethylacetate | 141-78-6 | |
| 73 | Ethylacrylate | 140-88-5 | 2B |
| 78 | Ethylamine | 75-04-7 | |
| 74 | Ethylene glycol | 107-21-1 | |
| 75 | Ethylene glycol dinitrate | 628-96-6 | |
| 76 | Ethylene chlorohydrin | 107-07-3 | |
| 77 | Ethyleneimine | 151-56-4 | 2B |
| 78 | Ethylamine | 75-04-7 | |
| 79 | 2,3-Epoxy-1-propanol | 556-52-5 | 2A |
| 80 | 1,2-Epoxypropane | 75-56-9 | 2B |
| 81 | Epichlorohydrin | 106-89-8 | 2A |
| 82 | Methyl iodide | 74-88-4 | 3 |
| 83 | Isobutyl acetate | 110-19-0 | |
| 84 | Isobutyl alcohol | 78-83-1 | |
| 85 | Isoamyl acetate | 123-92-2 | |
| 86 | Isoamyl alcohol | 123-51-3 | |
| 87 | Isopropyl acetate | 108-21-4 | |
| 88 | Isopropyl alcohol | 67-63-0 | 3 |
| | Ethylenedichloride | 107-06-2 | 2B |
| 89 | Carbon disulfide | 75-15-0 | |
| | Methylacetate | 79-20-9 | |
| | | 1319-77-3 | |
| 90 | Cresol, all isomers | 95-48-7(o-) | |
| | | 108-39-4(m-) | |
| | | 106-44-5(p-) | |

Supplementary Table 1. Continued

| Supplementary Table 1: Continued | | CAS Numbers | IARC GROUP |
|----------------------------------|--|--|------------|
| No | The working environment measurement target substances | | |
| 91 | Xylene,o,m,p-isomers | 1330-20-7 106-42-3(p-) 108-38-3(m-) 95-47-6(o-) | 3 |
| 92 | Chlorobenzene | 108-90-7 | |
| 93 | 1,1,2,2-Tetrachloroethane | 79-34-5 | 2B |
| 94 | Tetrahydrofuran | 109-99-9 | 2B |
| 95 | Toluene | 108-88-3 | 3 |
| 96 | Toluene-2,4-diisocyanate | 584-84-9 26471-62-5 | 2B |
| 97 | Toluene-2,6-diisocyanate | 91-08-7 | 2B |
| 98 | Triethylamine | 121-44-8 | |
| 99 | Trichloromethane | 67-66-3 | 2B |
| 100 | 1,1,2-Trichloroethane | 79-00-5 | 3 |
| 101 | Trichloroethylene | 79-01-6 | 1 |
| 102 | 1,2,3-Trichloropropane | 96-18-4 | 2A |
| 103 | Perchloroethylene | 127-18-4 | 2A |
| 104 | Phenol | 108-95-2 | 3 |
| 105 | Pentachlorophenol | 87-86-5 | 1 |
| 106 | Formaldehyde | 50-00-0 | 1 |
| 107 | Propyleneimine | 75-55-8 | 2B |
| 108 | n-Propylacetate | 109-60-4 | |
| 109 | Pyridine | 110-86-1 | 2B |
| 110 | Hexamethylene diisocyanate | 822-06-0 | |
| 111 | n-Hexane | 110-54-3 | |
| 112 | n-Heptane | 142-82-5 | |
| 113 | Dimethyl sulfate | 77-78-1 | 2A |
| 114 | Hydrazine | 302-01-2 | 2A |
| 115 | A mixture containing 1 percent or more of substances from 1 to 114 in capacity ratio | | |
| b) Metals (24) | | | |
| 1 | Copper (Fume, Dust, and Mist) | 7440-50-8 | |
| 2 | Lead and inorganic compounds | 7439-92-1 | 2B |
| 3 | Nickel and its inorganic compounds, Nickel carbonyl) (Nickel compounds (CAS no: none) - IARC Group 1) (Nickel, metallic (CAS no: 7440-02-0) - IARC Group 2B) (Nickel Carbonyl (CAS no: 13463-39-3) - IARC None) (Nickel(II) oxide (CAS no: 1313-99-1) - IARC None) | None 7440-02-0 13463-39-3 1313-99-1 | 1 2B |
| 4 | Manganese and inorganic compounds | 7439-96-5 | |
| 5 | Barium and soluble compounds | 7440-39-3 | |
| 6 | Platinum and its soluble salts | 7440-06-4 | |
| 7 | Magnesium oxide | 1309-48-4 | |
| 8 | Zinc oxide | 1314-13-2 | |
| 9 | Iron oxide dust and fume | 1309-37-1 | 3 |
| 10 | Selenium and compounds | 7782-49-2 | 3 |
| 11 | Mercury | 7439-97-6 | 3 |
| 12 | Antimony and its compounds (Trivalent antimony (CAS no: none) - IARC Group 2A) (Antimony trioxide, see Trivalent antimony (CAS no: 1309-64-4) - IARC Group 2A) (Antimony trisulfide, see Trivalent antimony (CAS no: 1345-04-6) - IARC Group 2A) (Antimony power (CAS no: 7440-36-0) - IARC Group None) | None 1309-64-4 1345-04-6 7440-36-0 | 2A |
| 13 | Aluminum and its compounds * Aluminium production (CAS no: none) - IARC Group 1 | 7429-90-5 | |

Supplementary Table 1. Continued

| No | The working environment measurement target substances | CAS Numbers | IARC GROUP |
|-----------------------------------|---|-------------|------------|
| 14 | Vanadium pentoxide | 1314-62-1 | 2B |
| 15 | Iodine and iodides | 7553-56-2 | |
| 16 | Indium and its compounds | 7440-74-6 | |
| 17 | Silver and its soluble compounds | 7440-22-4 | 3 |
| 18 | Titanium dioxide; | 13463-67-7 | 2B |
| 19 | Tin and its compounds | 7440-31-5 | |
| 20 | Zirconium and its compounds | 7440-67-7 | |
| 21 | Cadmium and its compounds | 7440-43-9 | 1 |
| 22 | Cobalt and its inorganic compounds | 7440-48-4 | 2A |
| 23 | Chromium and its inorganic compounds | | |
| | (Chromium, metallic (CAS NO: 7440-47-3) - IARC Group 3) | 7440-47-3 | 3 |
| | (Chromium (III) compounds (CAS NO: 16065-83-1) - IARC Group 3) | 16065-83-1 | 3 |
| | Chromium (VI) compounds ((CAS NO: 18540-29-9) - IARC Group 1) | 18540-29-9 | 1 |
| 24 | Tungsten and its compounds | 7440-33-7 | |
| 25 | A mixture containing at least 1% by weight of substances under the provisions from 1 through 24 | | |
| c) Acids and Alkalies (17) | | | |
| 1 | Formic acid | 64-18-6 | |
| 2 | Hydrogen peroxide | 7722-84-1 | 3 |
| 3 | Acetic anhydride | 108-24-7 | |
| 4 | Hydrogen fluoride | 7664-39-3 | |
| 5 | Hydrogen bromide | 10035-10-6 | |
| 6 | Sodium hydroxide | 1310-73-2 | |
| 7 | Potassium hydroxide | 1310-58-3 | |
| 8 | Sodium cyanide | 143-33-9 | |
| 9 | Potassium cyanide | 151-50-8 | |
| 10 | Calcium cyanide | 592-01-8 | |
| 11 | Acrylic acid | 79-10-7 | 3 |
| 12 | Hydrogen chloride | 7647-01-0 | 3 |
| 13 | Phosphoric acid | 7664-38-2 | |
| 14 | Nitric acid | 7697-37-2 | |
| 15 | Acetic acid | 64-19-7 | |
| 16 | Trichloroacetic acid | 76-03-9 | |
| 17 | Sulfuric acid | 7664-93-9 | |
| 18 | A mixture containing more than 1% by weight of substances from 1 to 17 | | |
| d) Gases (15) | | | |
| 1 | Fluorine | 7782-41-4 | |
| 2 | Bromine | 7726-95-6 | |
| 3 | Ethylene oxide | 75-21-8 | 1 |
| 4 | Arsine | 7784-42-1 | |
| 5 | Hydrogen cyanide | 74-90-8 | |
| 6 | Ammonia | 7664-41-7 | |
| 7 | Chlorine | 7782-50-5 | |
| 8 | Ozone | 10028-15-6 | |
| 9 | Nitrogen dioxide | 10102-44-0 | |
| 10 | Sulfur dioxide | 7746-09-5 | 3 |
| 11 | Nitric oxide | 10102-43-9 | |
| 12 | Carbon monoxide | 630-08-0 | |
| 13 | Phosgene | 75-44-5 | |
| 14 | Phosphine | 7803-51-2 | |
| 15 | Hydrogen sulfide | 7783-06-4 | |

Supplementary Table 1. Continued

| No | The working environment measurement target substances | CAS Numbers | IARC GROUP |
|------------------------------------|---|--|------------|
| e) Permitted materials (12) | | | |
| 1 | α -naphthylamine and its salts | 134-32-7 | 3 |
| 2 | Dianisidine and its salts | 119-90-4 | 2B |
| 3 | Dichlorobenzidine and its salts | 1331-47-1 | |
| 4 | Beryllium & compounds | 7440-41-7 | 1 |
| 5 | Benzotrichloride | 35983 | |
| 6 | Arsenic and inorganic compounds, as As | 7440-38-2 | 1 |
| 7 | Vinyl chloride | 75-01-4 | 1 |
| 8 | Coal tar pitch volatiles, as benzene soluble aerosol | 8007-45-2 | 1 |
| 9 | Chromite ore processing chromate, as Cr | 7440-47-3 | 3 |
| 10 | Zinc chromate, as Cr | 13530-65-9 | |
| 11 | o-Tolidine and its salts | 119-93-7 | 2B |
| 12 | Nickel subsulfide, as Ni (Nickel compounds) | 16812-54-7 | 1 |
| 13 | A mixture containing not less than 1% of the weight ratio of substances falling under any of 1 to 4 and 6 to 12 | | |
| f) Metal working fluids (MWFs) (1) | | | |
| | | | 1 |
| 2. Physical Agents (2) | | | |
| 1 | 8 hour time weighted average noise above 80 dB | | |
| 2 | High fever under Article 558 of the Safety and Health Regulations | | |
| 3. Dusts (7) | | | |
| 1 | Mineral dust | | |
| (1) | Silica | | |
| | Quartz | 14808-60-7 | 1 |
| | Cristobalite | 14464-46-1 | |
| | Trydimite | 15468-32-3 | |
| (2) | Silicates, less than 1% crystalline silica | | |
| | Mica | 12001-26-2 | |
| | Potland cement | 65997-15-1 | |
| | Soap stone : Talc not containing asbestos or asbestiform fibres | 14807-96-6 | |
| | Talc not containing asbestos or asbestiform fibres | 14807-96-6 | 3 |
| | Graphite | 7782-42-5 | |
| (3) | Mineral dusts | | |
| 2 | Grain dust | | |
| 3 | Cotton dust | | |
| 4 | Wood dust | | 1 |
| 5 | (Asbestos dusts:) (Asbestos (all forms, including actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite)) | 1332-21-4, 12172-73-5, 12001-29-5, 12001-28-4 | 1 |
| 6 | Welding fume | | 1 |
| 7 | Glass fibers | | 2B |

4. Other harmful factors harmful to the human body determined and publicly notified by the Minister of Employment and Labor

※ Note: The term "etc." means a case where two or more compounds having the same properties, such as an isomer, may be present in the relevant chemical substance.

Supplementary Table 2. Carcinogen concentrations exceeding 10% of the occupational exposure limits in the Korean electronic industry: Working environment measurement data, 2013–2017

| IARC agent | CAS No | KSIC | Products | Working process | Site work process | Measured value | Occupational Exposure Limit (OEL) | Exposure compared to OEL (% of OEL) | Unit |
|---|------------|-------|--|--------------------------------------|---|----------------|-----------------------------------|-------------------------------------|-------------------|
| IARC Group 1 | | | | | | | | | |
| 1,2-Dichloropropane | 78-87-5 | 28909 | Electrical equipment | Cleaning | Cleaning | 8.0126 | 75 | 10.68 | ppm |
| 1,3-Butadiene | 106-99-0 | 28519 | Other home electrical equipment manufacturing industries | Molding | Molding | 0.7611 | 1.6 | 47.57 | ppm |
| Arsenic and inorganic arsenic compounds | 7440-38-2 | 26129 | Semiconductor (epi wafer for infrared LEDs) | Smelting | Smelting | 0.0093 | 0.01 | 93 | mg/m ³ |
| Arsenic and inorganic arsenic compounds | 7440-38-2 | 26120 | Pseudo-semiconductor devices | Production 1Team | Smelting | 0.0076 | 0.01 | 76 | mg/m ³ |
| Arsenic and inorganic arsenic compounds | 7440-38-2 | 26120 | Semiconductor | Mixing/electrolytic furnace | Mixing/dissolving | 0.0043 | 0.01 | 43 | mg/m ³ |
| Arsenic and inorganic arsenic compounds | 7440-38-2 | 26211 | Liquid crystal device | ECO Analysis Room | Analysis | 0.0004 | 0.01 | 4 | mg/m ³ |
| Arsenic and inorganic arsenic compounds | 7440-38-2 | 26299 | Semiconductor IC | RCP(PKG) | RCP | 0.0002 | 0.01 | 2 | mg/m ³ |
| Arsenic and inorganic arsenic compounds | 7440-38-2 | 26120 | Semiconductor | Weighing/charging/dissolving/washing | Weighing/charging/dissolving/washing | 0.0064 | 0.01 | 64 | mg/m ³ |
| Arsenic and inorganic arsenic compounds | 7440-38-2 | 26299 | Semiconductor(Wafer) | Cleanroom Zone 2,3/Bead Blast | Implant(3F) | 0.001 | 0.005 | 20 | mg/m ³ |
| Benzene | 71-43-2 | 26120 | GC/HPLC | Test | Laboratory | 0.00025 | 0.5 | 0.05 | ppm |
| Benzene | 71-43-2 | 27216 | Industrial control equipment, automotive parts | TeleCommunication, ES | Manufacturing | 0.00064 | 0.8 | 0.08 | ppm |
| Benzene | 71-43-2 | 26120 | Transistor, Integrated Circuit, Electronic Devices, Sawing | Semiconductor manufacturing | Feed Forward Lab | 0.001 | 1 | 0.1 | ppm |
| Beryllium and beryllium compounds | 7440-41-7 | 26429 | Wireless communication products | Sintering/molding | Ceramic | 0.0008 | 0.002 | 40 | mg/m ³ |
| Chromium (VI) compounds | 13530-65-9 | 28909 | defense products | Sanding and washing | PM2 Team 2 Plant Hawk | 0.0036 | 0.01 | 36 | mg/m ³ |
| Cadmium and cadmium compounds | 7440-43-9 | 27215 | semiconductor equipment (scrabs, chiller) | C2 copper pipe welding | C2 copper pipe welding | 0.0026 | 0.01 | 26 | mg/m ³ |
| Cadmium and cadmium compounds | 7440-43-9 | 26299 | Electrical contacts and low temperature welding rods | Melting board | Production Division 2 | 0.0072 | 0.008 | 89.88 | mg/m ³ |
| Cadmium and cadmium compounds | 7440-43-9 | 27215 | Pressure measurement and inspection instrument | Argon welding | Argon welding | 0.0019 | 0.01 | 19 | mg/m ³ |
| Cadmium and cadmium compounds | 7440-43-9 | 28519 | Water purifier | Water purifier | Welding flux | 0.0075 | 0.05 | 15 | mg/m ³ |
| Chromium (VI) compounds | 13530-65-9 | 28909 | Chamber | Welding | Welding | 0.0215 | 0.05 | 43 | mg/m ³ |
| Chromium (VI) compounds | 13530-65-9 | 28511 | Agricultural packaging machine | Welding and grinding | Welding and grinding | 0.0349 | 0.05 | 69.8 | mg/m ³ |
| Chromium (VI) compounds | 13530-65-9 | 26291 | Communication equipment | Welding | Welding(plating) | 0.0117 | 0.05 | 23.46 | mg/m ³ |
| Chromium (VI) compounds | 13530-65-9 | 28520 | Air-conditioning equipment parts | Spot welding | Spot welding | 0.0039 | 0.01 | 39 | mg/m ³ |
| Chromium (VI) compounds | 13530-65-9 | 28111 | Power generation equipment material | Welding | Welding | 0.0047 | 0.01 | 47 | mg/m ³ |
| Chromium (VI) compounds | 13530-65-9 | 27216 | Dust collection equipment | Painting | Painting | 0.0041 | 0.01 | 41 | mg/m ³ |
| Chromium (VI) compounds | 13530-65-9 | 26299 | Food Manufacturing Automation Mechanical Instruments | Assembly, Thought, Welding | Assembly, Thought, Welding | 0.0088 | 0.01 | 88 | mg/m ³ |
| Chromium (VI) compounds | 13530-65-9 | 27215 | Gas equipment | Painting | Spray painting | 0.005 | 0.01 | 50 | mg/m ³ |
| Coal-tar pitch | 65996-93-2 | 27321 | Optical lenses, telescopes, telescopes | Polishing | Optical science | 0.094 | 0.2 | 47 | mg/m ³ |
| Coal-tar pitch | 65996-93-2 | 27321 | Sighting mirror | Optical, abrasive | Preparation workroom | 0.0916 | 0.2 | 45.8 | mg/m ³ |
| Coal-tar pitch | 65996-93-2 | 28909 | Electrical engineering, electrical repair | PMC | Electrical and electrical panel maintenance | 0.0578 | 0.2 | 28.9 | mg/m ³ |
| Coal-tar pitch | 65996-93-2 | 27321 | Optical lens | Cleaning/Coating | Cleaning/Coating | 0.0777 | 0.2 | 38.85 | mg/m ³ |
| Ethylene oxide | 7429-90-5 | 27199 | Dental needle | Sterilization | Sterilization | 11.714 | 0.8 | 1464.25 | ppm |
| Vinyl chloride | 1975-01-04 | 28302 | Electric wire | Extrusion/markings | Extrusion/markings | 0.4492 | 1 | 44.92 | ppm |
| Vinyl chloride | 1975-01-04 | 26299 | Plastic pipes, pipes and hoses | Extrusion and automatic printing | Extrusion molding | 0.288 | 1 | 28.8 | ppm |
| Vinyl chloride | 1975-01-04 | 26410 | Optical cable | Extrusion | Extrusion | 0.921 | 1 | 92.1 | ppm |

Supplementary Table 2. Continued

| IARC agent | CAS No | KSIC | Products | Working process | Site work process | Measured value | Occupational Exposure Limit (OEL) | Exposure compared to OEL (% of OEL) | Unit |
|--|------------|-------|---|--|--|----------------|-----------------------------------|-------------------------------------|-------------------|
| Trichloroethylene | 1979-01-06 | 27199 | Implant material | Cleaning | TCE cleaning | 27.883 | 10 | 278.83 | ppm |
| Trichloroethylene | 1979-01-06 | 26299 | Processing of communication parts | TCE cleaning | TCE cleaning | 48.2361 | 20 | 241.18 | ppm |
| Formaldehyde | 50-00-0 | 26221 | Printed circuit board | Chemical copper | Chemical copper | 0.6604 | 0.33 | 200.12 | ppm |
| Mineral oils, untreated or mildly treated | | 28111 | Wind power generator | External internal diameter (grinding) | External internal diameter (grinding) | 0.9258 | 0.64 | 144.66 | mg/m ³ |
| Mineral oils, untreated or mildly treated | | 27309 | Optical lens | Optical Lend Centering Seal | Optical Lend Centering Seal | 0.1646 | 0.8 | 20.58 | mg/m ³ |
| Mineral oils, untreated or mildly treated | | 27309 | Optical lens | Shape processing 2 | Shape processing 2 | 0.2333 | 0.8 | 29.16 | mg/m ³ |
| Mineral oils, untreated or mildly treated | | 28112 | Other transformers and components | Metal processing | Metal processing | 0.7119 | 0.8 | 88.99 | mg/m ³ |
| Mineral oils, untreated or mildly treated | | 26299 | Mobile phone interior and exterior materials | Computer numerical control | Computer numerical control | 0.6076 | 0.8 | 75.95 | mg/m ³ |
| Mineral oils, untreated or mildly treated | | 26429 | Other wireless communication equipment and components | Machining center (MCT) | Machining center (MCT) | 0.5324 | 0.8 | 66.55 | mg/m ³ |
| Nickel compounds | 16812-54-7 | 26299 | Electronic components | Plating | Plating | 0.026 | 0.08 | 32.5 | mg/m ³ |
| Nickel compounds | 16812-54-7 | 26299 | Electronic components | gold/silver line | Surface Treatment Team | 0.0575 | 0.067 | 85.87 | mg/m ³ |
| Nickel compounds | 16812-54-7 | 28119 | Manufacturing of other generators and electrical converters | Welding | Welding | 0.0414 | 0.2 | 20.7 | mg/m ³ |
| Nickel compounds | 16812-54-7 | 26299 | Car battery | Manufacturing 2 Parts #5-1 Packaging | [Material 1 Dong] Electronic Materials) Material 1 Group | 0.098 | 0.2 | 49 | mg/m ³ |
| Nickel compounds | 16812-54-7 | 28520 | Kitchen pot | Welding | Welding | 0.0281 | 0.2 | 14.05 | mg/m ³ |
| Nickel compounds | 16812-54-7 | 26299 | Electronic components | Process 3 | Manufacturing 1 unit (1B dong) | 0.0008 | 0.006 | 13.33 | mg/m ³ |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 26293 | Other Resistors | Molding/Filling | Other applications | 0.0257 | 0.05 | 51.4 | mg/m ³ |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 28112 | Other transformers and components | Moulding, polishing | Other processing | 0.055 | 0.05 | 110 | |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 28909 | Construction industry | Reinforced earth block construction | Other Reinforced earth block construction | 0.5203 | 0.044 | 1171.85 | mg/m ³ |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 26211 | Liquid crystal device | Cleaning | Cleaning | 0.0084 | 0.05 | 16.8 | mg/m ³ |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 27191 | Crown, Pocerin, dentures | Polishing | Polishing | 0.0078 | 0.05 | 15.6 | mg/m ³ |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 26299 | Video sound and communication equipment | MOLD | MOLD | 0.008 | 0.05 | 16 | mg/m ³ |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 27192 | Dental laboratory | Mold making | Mold making | 0.0458 | 0.05 | 91.6 | mg/m ³ |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 26299 | Semiconductor equipment parts | Hydrogen welding | Gas welding | 0.503 | 2 | 25.15 | mg/m ³ |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 28511 | Home refrigerator | ACE raw material supply device | ACE raw material supply device | 2.3057 | 5 | 46.11 | mg/m ³ |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 26299 | Battery pin, diode transition | Mixing | Raw material | 1.64 | 3.33 | 49.25 | mg/m ³ |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 28520 | Non-electric cooking and heating appliances for home use | Mixing and ball milling | Mixing and ball milling | 0.0068 | 0.05 | 13.65 | mg/m ³ |
| Silica dust, crystalline, in the form of quartz or cristobalite | | 28520 | Non-electric cooking and heating appliances for home use | painting | painting | 0.0116 | 0.05 | 23.2 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26110 | Electronic components (electronic circuits) | Surface treatment | Surface treatment | 0.1368 | 0.147 | 93.25 | ppm |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26211 | LCD display | 2F Light Heavy Metal Analysis Room (C/R) | Paju Analysis Team | 0.0264 | 0.2 | 13.2 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26299 | Electronic components | Rationalization Line No. 3 | Manufacturing | 0.0346 | 0.16 | 21.63 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26129 | Power semiconductor production | DIFF | D-LINE 2F | 0.0306 | 0.2 | 15.3 | mg/m ³ |

Supplementary Table 2. Continued

| IARC agent | CAS No | KSIC | Products | Working process | Site work process | Measured value | Occupational Exposure Limit (OEL) | Exposure compared to OEL (% of OEL) | Unit |
|--|-----------|-------|--|--|---|----------------|-----------------------------------|-------------------------------------|-------------------|
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 28202 | Lead-acid battery | Sulfuric acid preparation plant | Production support team | 0.027 | 0.2 | 13.5 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26221 | Flexible Printed Circuit Board | Etching | Etching | 0.079 | 0.16 | 49.36 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26221 | Flexible Printed Circuit Board | Etching | Etching | 0.156 | 0.133 | 117.03 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 28519 | Washing machine parts, automobile parts | Phosphate film treatment | Phosphate film treatment | 0.0362 | 0.2 | 18.1 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26299 | Electronic components | Pretreatment/waste treatment/laboratory | Pretreatment/waste treatment/laboratory | 0.17 | 0.2 | 85 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26299 | Electronic components | Cleaning | Semiconductor fabrication plant | 0.0757 | 0.2 | 37.85 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 28511 | Electronic components | Wastewater treatment | Wastewater treatment | 0.03 | 0.2 | 15 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 28519 | Electric cooker | Anodizing | Anodizing | 0.1183 | 0.2 | 59.17 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 28909 | Welding machine, etc | Furnace, casting, molding | Other Dissolution | 0.1531 | 0.2 | 76.55 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26221 | Other printed circuit boards | Surface treatment | Surface treatment | 0.0329 | 0.2 | 16.45 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26299 | Chemical polishing | Chemical polishing | Other plating | 0.0386 | 0.2 | 19.3 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26221 | Printed circuit board | Peel and Etching (DES) | Other surface treatments | 0.1185 | 0.2 | 59.25 | mg/m ³ |
| Strong-inorganic-acid mists containing sulfuric acid (see Acid mist) | 1310-73-2 | 26120 | Semiconducto | 45Bay | 15 L8F | 0.0098 | 0.08 | 12.25 | mg/m ³ |
| Wood dust | | 26120 | Polysilicon | Materials | Materials | 0.152 | 0.5 | 30.4 | mg/m ³ |
| Wood dust | | 26519 | Sound equipment system | Wood processing | Wood processing | 0.972 | 1 | 97.2 | mg/m ³ |
| Wood dust | | 28302 | Other sheath insulation and cables | Wood working room | Woodworking room | 0.3861 | 1 | 38.61 | mg/m ³ |
| Wood dust | | 28512 | Ceramic products (electric heaters, etc.) | Processing/Assembly | Other processing | 0.62 | 1 | 62 | mg/m ³ |
| Wood dust | | 27213 | agricultural implement | Cutter | Processing | 0.954 | 1 | 95.4 | mg/m ³ |
| Welding fumes | 7440-50-8 | 27219 | chemical test machinechemical test machine | Welding | Welding | 4.81 | 5 | 96.2 | mg/m ³ |
| Welding fumes | 7440-50-8 | 28119 | Manufacture of power generation facilities and piping | Manufacturing | Manufacturing | 4.2686 | 5 | 85.37 | mg/m ³ |
| Welding fumes | 7440-50-8 | 28119 | Generating unit | Attaching/welding | Can-manufacturing | 2.74 | 4 | 68.5 | mg/m ³ |
| Welding fumes | 7440-50-8 | 26299 | Shelf, guardrail | Electric welding | Electric welding | 4.974 | 5 | 99.48 | mg/m ³ |
| Welding fumes | 7440-50-8 | 28119 | Heat exchangers, power generation facilities | Flux Cored Arc Welding(FCAW) | Flux Cored Arc Welding(FCAW) | 3.9783 | 5 | 79.57 | mg/m ³ |
| Welding fumes | 7440-50-8 | 26299 | Electronic components | Milling | Milling | 0.8364 | 5 | 16.73 | mg/m ³ |
| Welding fumes | 7440-50-8 | 26120 | Semiconducto | CMP | S1 Ph-3 LINE | 0.0027 | 0.003 | 100 | mg/m ³ |
| IARC Group 2A | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | 28122 | Wired and wireless communication broadcasting equipment | Automatic soldering | Automatic soldering | 22.3793 | 350 | 6.39 | ppm |
| Aniline (see also Aniline hydrochloride) | 62-53-3 | 26291 | Electronic components | Coating/filling/washing | 3rd Floor/sensor TF | 0.5061 | 2 | 25.31 | ppm |
| Antimony trioxide, see Trivalent antimony | 7440-36-0 | 28122 | Electrical, electronic devices and related products (INV, PLC) | Programmable Logic Controller, printed circuit board | SMT Manufacturing Room, 3F, A-Wing | 0.0922 | 0.5 | 18.44 | mg/m ³ |
| Antimony trioxide, see Trivalent antimony | 7440-36-0 | 28302 | Insulated wire | Extrusion | Extrusion | 0.0114 | 0.5 | 2.28 | mg/m ³ |
| Antimony trioxide, see Trivalent antimony | 7440-36-0 | 28302 | Cable | Extrusion/markings | Extrusion/markings | 0.0543 | 0.4 | 13.568 | mg/m ³ |
| Antimony trioxide, see Trivalent antimony | 7440-36-0 | 26299 | Brake pad | Thermal molding | Thermal molding | 0.3607 | 0.4 | 90.175 | mg/m ³ |
| Antimony trioxide, see Trivalent antimony | 7440-36-0 | 26299 | Brake pad | Thermal molding | Thermal molding | 0.0073 | 0.4 | 1.825 | mg/m ³ |
| Antimony trioxide, see Trivalent antimony | 7440-36-0 | 28302 | Cable | Extrusion | Extrusion | 0.0132 | 0.333 | 3.96 | mg/m ³ |
| Antimony trioxide, see Trivalent antimony | 7440-36-0 | 28302 | Insulating material | Measuring | Measuring | 0.0415 | 0.4 | 10.375 | mg/m ³ |

Supplementary Table 2. Continued

| IARC agent | CAS No | KSIC | Products | Working process | Site work process | Measured value | Occupational Exposure Limit (OEL) | Exposure compared to OEL (% of OEL) | Unit |
|---|------------|-------|---|--|--|----------------|-----------------------------------|-------------------------------------|-------------------|
| Art glass, glass containers and pressed ware (manufacture of) | | 26221 | Printed Circuit Board | Post-processing | Cutting out | 2.8928 | 5 | 57.86 | mg/m ³ |
| Art glass, glass containers and pressed ware (manufacture of) | | 28111 | Iron door | Frame production | Frame production | 1.5397 | 5 | 30.79 | mg/m ³ |
| Art glass, glass containers and pressed ware (manufacture of) | | 26211 | Liquid crystal device | CPS(Scriber/Break) | Polishing | 1.713 | 5 | 34.26 | mg/m ³ |
| Art glass, glass containers and pressed ware (manufacture of) | | 28421 | Automobile lamps | Injection molding | Reflector | 2.3683 | 4 | 59.21 | mg/m ³ |
| Art glass, glass containers and pressed ware (manufacture of) | | 27212 | Experimental electric furnace | Computer Numerical Control(CNC) machining, cutting | Product processing | 0.29 | 5 | 5.8 | mg/m ³ |
| Cobalt metal with tungsten carbide | 7440-48-4 | 26299 | Battery research development | Safety test laboratory | Safety test laboratory | 0.0088 | 0.02 | 44 | mg/m ³ |
| Cobalt metal with tungsten carbide | 7440-48-4 | 26299 | Other electronic tubes and electronic components | Mixing/Crushing | Mixing/Packaging | 0.0059 | 0.02 | 29.5 | mg/m ³ |
| N,N-Dimethylformamide | 1968-12-02 | 27199 | Medical tools, sanitary products | Facilities[coating, packaging, washing] | Production department | 5.8534 | 10 | 58.53 | ppm |
| Dichloromethane (Methylene chloride) | 1975-09-02 | 26299 | Valve parts | Cleaning/inspection | Cleaning/inspection | 75.4882 | 50 | 150.98 | ppm |
| Dichloromethane (Methylene chloride) | 1975-09-02 | 28519 | Air conditioning components | Cleaning | Ultrasonic cleaning | 15.1109 | 50 | 30.22 | ppm |
| Dichloromethane (Methylene chloride) | 1975-09-02 | 26299 | Other electronic components | Cleaning | Ultrasonic cleaning | 40.9306 | 50 | 81.86 | ppm |
| Dichloromethane (Methylene chloride) | 1975-09-02 | 26299 | Air conditioning components | Ultrasonic cleaning | Ultrasonic cleaning | 0.8082 | 50 | 1.62 | ppm |
| Dichloromethane (Methylene chloride) | 1975-09-02 | 26299 | Electronic components(LCD,TV) | Cleaning | Cleaning | 17.1722 | 50 | 34.34 | ppm |
| Dichloromethane (Methylene chloride) | 1975-09-02 | 28111 | Small AC/DC Geared Motor | Machining/washing | Machining/washing | 44.7248 | 50 | 89.45 | ppm |
| Epichlorohydrin | 106-89-8 | 28121 | Electronic components (Connector) | Quality test | Quality test | 0.0441 | 0.5 | 8.82 | ppm |
| Epichlorohydrin | 106-89-8 | 26299 | Secondary painting/solvent chamber | Secondary painting/solvent chamber | Manufacturing Division C on the 2nd floor | 0.0252 | 0.5 | 5.04 | ppm |
| Hydrazine | 302-01-2 | 26299 | GBW, MGW | Analysis Center | Analysis Center | 0.0192 | 0.05 | 38.4 | ppm |
| Silicon carbide whiskers | 409-21-2 | 26299 | Semiconductor, LCD parts etc | Sanding | [SiC production] Sanding | 6.8126 | 10 | 68.13 | mg/m ³ |
| Styrene | 100-42-5 | 28902 | Electrical insulator | Molding | Molding | 12.8475 | 20 | 64.24 | ppm |
| Tetrachloroethylene (Perchloroethylene) | 127-18-4 | 26299 | Electronic components | Cleaning | Cleaning | 40.521 | 25 | 162.08 | ppm |
| Tungsten carbide with cobalt metal (see Cobalt metal with tungsten carbide) | 7440-48-4 | 26600 | Functional film, printer toner, etc | Lithium Cobalt Oxide(LiCoO ₂ , LCO) 생산 | Lithium Cobalt Oxide(LiCoO ₂ , LCO) | 0.3782 | 0.02 | 1891 | mg/m ³ |
| IARC Group 2B | | | | | | | | | |
| 1,4-Dioxane | 123-91-1 | 26299 | Cognitive radio (CR) | Organic Light Emitting Diodes(OLED) | Organic Light Emitting Diodes(OLED) | 5.0931 | 25 | 20.372 | ppm |
| 1-Bromopropane | 106-94-5 | 26299 | Cell phone, electric vehicle battery parts | Cleaning room | Cleaning room | 82.474 | 20 | 412.37 | ppm |
| 1-Bromopropane | 106-94-5 | 27322 | Camera parts | Organic solvent cleaning | Organic solvent cleaning | 11.647 | 25 | 46.588 | ppm |
| 3,3'-Dimethoxybenzidine (ortho-Dianisidine) | 119-90-4 | 27213 | Liquid Chromatograph(HPLC), MASS Spectrometry(MS) | Laboratory | Laboratory | 0 | 0.01 | 0 | mg/m ³ |
| Acetaldehyde | 75-07-0 | 26120 | LED Chip | LED Chip | LED Chip | 0.538 | 40 | 1.345 | ppm |
| Acrylonitrile | 107-13-1 | 26299 | Electromagnetic Compatibility | Batch reactor(bottle polymerization) | | 0.3175 | 2 | 15.875 | ppm |
| Bitumens, extracts of steam-refined and air-refined; steam-refine | 8052-42-4 | 28302 | Insulated wires and cables | Extrusion(D-150EXT) | Extrusion | 0.2259 | 0.4 | 56.475 | mg/m ³ |
| Bitumens, occupational exposure to straight-run bitumens and thei | 8052-42-4 | 28302 | Insulated wires and cables | Extrusion(D-150EXT) | Extrusion(D-150EXT) | 0.1079 | 0.4 | 26.967 | mg/m ³ |
| Carbon black | 1333-86-4 | 26299 | Filter | Recharging base | Recharging base | 3.23 | 3.5 | 92.286 | mg/m ³ |
| Carbon black | 1333-86-4 | 28902 | Carbon products | Plasticity | plasticity | 2.383 | 2.8 | 85.107 | mg/m ³ |
| Carbon black | 1333-86-4 | 26299 | Assembly | Assembly | Assembly | 0.226 | 3.5 | 6.457 | mg/m ³ |
| Chloroform | 67-66-3 | 26221 | Laminated sheet of copper foil | Refining copper (washing room, refining room) | Organic Light Emitting Diodes | 10.6321 | 10 | 106.321 | ppm |
| N,N-Dimethylacetamide | 127-19-5 | 26299 | Nanomembrane | Dissolution/radiation | Dissolution/radiation | 18.0065 | 10 | 180.065 | ppm |
| Diethanolamine | 111-42-2 | 26221 | Printed circuit board | Chemical PART | M2 | 1.221 | 2.4 | 50.875 | ppm |
| Diethanolamine | 111-42-2 | 28909 | Electronic components | Lathe processing | Lathe processing | 0.116 | 0.46 | 25.217 | ppm |
| Ethylbenzene | 100-41-4 | 28302 | silicon wire | Coating/mixing | Coating | 44.681 | 100 | 44.681 | ppm |

Supplementary Table 2. Continued

| IARC agent | CAS No | KSIC | Products | Working process | Site work process | Measured value | Occupational Exposure Limit (OEL) | Exposure compared to OEL (% of OEL) | Unit |
|------------------------|------------|-------|--|--|---|----------------|-----------------------------------|-------------------------------------|-------------------|
| Ethyl acrylate | 140-88-5 | 28519 | Air conditioning, washing machine parts | Rust prevention, Assembly | Assembled winding application | 0.0063 | 5 | 0.126 | ppm |
| Lead | 7439-92-1 | 26299 | Electronic components | Examination room | Manufacturing dept | 0.0057 | 0.04 | 14.25 | mg/m ³ |
| Lead | 7439-92-1 | 28202 | Battery manufacturing | Assembly | Assembly | 0.0376 | 0.04 | 94 | mg/m ³ |
| Lead | 7439-92-1 | 28302 | Other sheath insulation and cables | Dipping soldering | Dipping soldering | 0.0118 | 0.04 | 29.5 | mg/m ³ |
| Lead | 7439-92-1 | 26120 | Other similar semiconductors | Laboratory | Laboratory | 0.0086 | 0.05 | 17.2 | mg/m ³ |
| Lead | 7439-92-1 | 28121 | Fuse for ship | Lead soldering | Lead soldering | 0.0139 | 0.05 | 27.8 | mg/m ³ |
| Lead | 7439-92-1 | 26299 | X-ray tube | Housing | Housing | 0.0098 | 0.05 | 19.6 | mg/m ³ |
| Lead | 7439-92-1 | 26299 | Soldering | Soldering | Lead dissolution | 0.02 | 0.05 | 40 | mg/m ³ |
| Lead | 7439-92-1 | 26299 | Electronic components | PBA Waver Soldering, Dipping | PBA Waver Soldering, Dipping | 0.0022 | 0.044 | 4.955 | mg/m ³ |
| Lead | 7439-92-1 | 26299 | lead-acid battery | lead-acid battery curing | lead-acid battery curing | 0.3897 | 0.05 | 779.4 | mg/m ³ |
| Lead | 7439-92-1 | 26291 | Electronic components, printed circuit boards | lead soldering | lead soldering | 0.0002 | 0.05 | 0.4 | mg/m ³ |
| Lead | 7439-92-1 | 28202 | car battery | Application | Application | 0.0387 | 0.04 | 96.625 | mg/m ³ |
| Lead | 7439-92-1 | 28202 | lead-acid battery | welding | welding | 0.0117 | 0.05 | 23.4 | mg/m ³ |
| Lead | 7439-92-1 | 27199 | Medical Other Devices | Assembling (Soldering/Cleaning) | Assembling (Soldering/Cleaning) | 0.0026 | 0.05 | 5.2 | mg/m ³ |
| Lead | 7439-92-1 | 28111 | motor | Spray painting | Spray painting | 0.0077 | 0.04 | 19.25 | mg/m ³ |
| Lead | 7439-92-1 | 26221 | semiconductor circuit engine | lead soldering | lead soldering | 0.0178 | 0.05 | 35.6 | mg/m ³ |
| Methyl isobutyl ketone | 108-10-1 | 26299 | LED Light Plate | Print/inspection/dry | Print/inspection/dry | 46.6087 | 50 | 93.217 | ppm |
| Methyl isobutyl ketone | 108-10-1 | 26299 | Electronic components | Printing | Printing | 32.1453 | 50 | 64.291 | ppm |
| Naphthalene | 91-20-3 | 26299 | Research and development | Injection/injection | Mold Technology Center | 0.001 | 50 | 0.002 | mg/m ³ |
| Nitromethane | 75-52-5 | 28121 | Electronic components | Assembly-Inspection | Assembly-Inspection | 0.5833 | 20 | 2.916 | ppm |
| Nitrobenzene | 98-95-3 | 28410 | UV lamps, dryers, exposure machines, electronics | Coating | Lamp production | 0 | 1 | 0 | ppm |
| Nickel, metallic | 7440-02-0 | 28111 | Power generation facilities | Welding | Welding | 0.0643 | 0.8 | 8.038 | mg/m ³ |
| Nickel, metallic | 7440-02-0 | 26120 | Polysilicon | Production process / Post-process | Maintenance part (piping) / (Korea Silicon) | 0.0002 | 1 | 0.02 | mg/m ³ |
| Nickel, metallic | 7440-02-0 | 26221 | printed circuit board | Gold plating | Gold plating | 0.2008 | 0.733 | 27.394 | mg/m ³ |
| Nickel, metallic | 7440-02-0 | 28909 | Sputtering target | Press molding | Press molding | 0.5497 | 1 | 54.97 | mg/m ³ |
| Propylene oxide | 75-56-9 | 26410 | Network products, cell phone case coatin | Surface Mount Device | Network Korea Manufacturing Group | 0.391 | 2 | 19.55 | ppm |
| Tetrahydrofuran | 109-99-9 | 26299 | Electronic components | Injection molding | Injection molding | 22.7041 | 50 | 45.408 | ppm |
| Titanium dioxide | 7440-39-3 | 26221 | PCB circuit board | PSR Printing | PSR Printing | 0.0102 | 8 | 0.128 | mg/m ³ |
| Titanium dioxide | 7440-39-3 | 28421 | Electronic components | Automatic stamping | Automatic stamping | 0.0567 | 5 | 1.134 | mg/m ³ |
| Titanium dioxide | 7440-39-3 | 28119 | heat exchanger | Pipe processing | Pipe processing | 0.059 | 10 | 0.59 | mg/m ³ |
| Titanium dioxide | 7440-39-3 | 28119 | Electrical automatic control switchboard | Painting | Painting | 4.85 | 10 | 48.5 | mg/m ³ |
| Titanium dioxide | 7440-39-3 | 28519 | Washing machine parts | Painting | Power painting | 0.002 | 10 | 0.02 | mg/m ³ |
| Titanium dioxide | 7440-39-3 | 28112 | Other transformers and components | CO2 arc welding | CO2 arc welding | 0.0334 | 10 | 0.334 | mg/m ³ |
| Toluene diisocyanates | 584-84-9 | 27212 | Communication equipment parts | Cleaning room | Cleaning room | 0.0022 | 0.005 | 44 | ppm |
| Toluene diisocyanates | 584-84-9 | 26329 | Financial Services Equipment Components | Mold, cas | Other processing | 0.0028 | 0.005 | 55.8 | ppm |
| Vanadium pentoxide | 13147-62-1 | 27199 | Implant | Sanding/Polishing | Sanding/Polishing | 0.0015 | 0.05 | 3.08 | mg/m ³ |
| Vanadium pentoxide | 13147-62-1 | 26519 | Near Field Communication | Blending | Blending | 0.049 | 0.05 | 98 | mg/m ³ |
| Vanadium pentoxide | 13147-62-1 | 26299 | Manufacture of automotive parts, electronic tubes, and other electronic components | 1st Floor of MLCC Plant 1] - Component mass production QA_G [Deployment inspection | Component Mass Production QA_G [Batch Inspection] | 0.0096 | 0.05 | 19.2 | mg/m ³ |
| Vinyl acetate | 108-05-4 | 26211 | Adhesive tape | Coating (adhesive) | (Cobra)Mixing, coating | 3.6752 | 10 | 36.752 | ppm |
| Vinyl acetate | 108-05-4 | 27199 | Medical equipment | Coating | Band-Aid | 3.2477 | 10 | 32.477 | ppm |

Supplementary Table 3. Enumerating of Occupational Carcinogens

| Loomis et al. (2018) | Siemiatycki (2004) | Kauppinen et al. (2000) | Cherrie et al. (2007) | Korea Occupational Safety and Health Act (2022) |
|---|--------------------|-------------------------|-----------------------|---|
| 1,2-Dichloropropane | | | | 0 |
| 1,3-Butadiene | | | | 0 |
| 2,3,7,8-Tetrachlorodibenzopara-dioxin | | | | |
| 2-Naphthylamine | 0 | 0 | | |
| 4-Aminobiphenyl | 0 | 0 | | |
| Acid mists, strong inorganic (Strong inorganic-acid mists containing sulfuric acid) | 0 | 0 | 0 | 0 |
| Arsenic and inorganic arsenic compounds | 0 | 0 | 0 | 0 |
| Asbestos (all forms,including actinolite, amosite,anthophyllite, chrysotile,crocidolite, tremolite) | 0 | 0 | 0 | 0 |
| Benzene | 0 | 0 | 0 | 0 |
| Benzidine | 0 | 0 | | |
| Beryllium and beryllium compounds | 0 | 0 | 0 | 0 |
| Bis(chloromethyl)ether:chloromethyl methyl ether(technical grade) | | 0 | | |
| Cadmium and cadmium compounds | 0 | 0 | 0 | 0 |
| Chromium (VI) compounds | 0 | 0 | 0 | 0 |
| Coal-tar pitch (PAHs) | 0 | 0 | 0 | |
| Engine exhaust, diesel | | | 0 | |
| Formaldehyde | | | 0 | 0 |
| Ionising radiation (all types) | 0 | | | |
| Leather dust | | | | |
| Lindane (see also hexachlorocyclohexanes) | | | | |
| Mineral oils, untreated or mildly treated | 0 | | | 0 |
| Nickel compounds | 0 | 0 | 0 | 0 |
| ortho-Toluidine | | | | |
| Outdoor air pollution | | | | |
| Particulate matter in outdoor air pollution | | | | |
| Pentachlorophenol | | | | 0 |
| Plutonium | | | | |
| Polychlorinated biphenyls | | | | |
| Radioiodines, including iodine-131 † † | | | | |
| Radionuclides, alphaparticle emitting, internally deposited** | | | | |
| Radionuclides, betaparticle emitting, internally deposited** | | | | |
| Radium-224 and its decay products§ | | | | |
| Radium-226 and its decay products | | | | |
| Radium-228 and its decay products | | | | |
| Radon-222 and its decay products | | 0 | 0 | |
| Shale oils | 0 | | | |
| Silica dust, crystalline, in the form of quartz or cristobalite | 0 | | 0 | 0 |
| Solar radiation** | 0 | 0 | 0 | |
| Soot | 0 | | | |
| Sulfur mustard (see also mustard gas) | 0 | 0 | | |
| Tobacco smoke, secondhand | 0 | 0 | 0 | |
| Trichloroethylene | | | 0 | 0 |

Supplementary Table 3. Continued

| Loomis et al. (2018) | Siemiatycki (2004) | Kauppinen et al. (2000) | Cherrie et al. (2007) | Korea Occupational Safety and Health Act (2022) |
|--------------------------------|--|-------------------------|--|---|
| Ultraviolet radiation** | | | | |
| Vinyl chloride | 0 | 0 | 0 | 0 |
| Welding fumes | | | | 0 |
| Wood dust | 0 | 0 | 0 | 0 |
| X-radiation and gammaradiation | | | 0 | |
| | 2,3,7,8-Tetrachlorodibenzo-para-dioxin(TCDD) | | | |
| | Aflatoxin | 0 | | |
| | Erionite | | | |
| | Ethylene oxide | 0 | | 0 |
| | Talc containing asbestiform fibers | 0 | | |
| | 1,4-Butanediol dimethanesulphonate (Myleran) | | | |
| | Azathioprine | | | |
| | Chlorambucil | | | |
| | Cyclophosphamide | | 0 | |
| | Cyclosporin | | | |
| | Diethylstilbestrol | | | |
| | Estrogens, non-steroidal | | | |
| | Estrogens, steroidal | | | |
| | Hepatitis B virus (HBV) Not estimated | | | |
| | Hepatitis C virus (HCV) Not estimated | | | |
| | Melphalan | | | |
| | Methyl-CCNU | | | |
| | Oral contraceptives, combined | | | |
| | Oral contraceptives, sequential | | | |
| | Thiotepa | | | |
| | Treosulfan | | | |
| | | | Tetrachloroethylene | |
| | | | Cisplatin | |
| | | | Cobalt metal with tungsten carbide | |
| | | | Ethylene dibromide | |
| | | | Hairdresser or barber (occupational exposure as a ...) | |
| | | | Iron and steel founding | |
| | | | Lead compounds, inorganic | |
| | | | Painter (occupational exposure as a ...) | |
| | | | Rubber industry | |
| | | | Styrene-7,8-oxide | |
| No of carcinogens: 47 | No of carcinogens: 28 | No of carcinogens: 38 | No of carcinogens: 30 | No of carcinogens: 20 |

Roomis et al. (2018): 47 Occupational Carcinogens (IARC Group 1) from 120 IARC carcinogens in 2004

Siemiatycki (2004): 28 Occupational Carcinogens (IARC Group 1) from IARC carcinogens, from 1972 through 2003

Kauppinen et al. (2000): 38 Carcinogens (IARC Group 1) from IARC carcinogens in 1999

Cherrie et al. (2007): 30 Carcinogens, which were carcinogenic agents at work based on data from CAREX

Korea Occupational Safety and Health Act (2022): 20 carcinogens from 190 hazardous factors subject to work environment measurement (related to Article 186 (1)) (Enforcement Rules of the Industrial Safety and Health Act [Attachment 21]) specified in the Korea Occupational Safety and Health Act)