



Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**

Safety Regulation System (SRS) health and hygiene code index

August 2019

1 Adelaide Terrace, East Perth WA 6004
Postal address: Locked Bag 100, East Perth WA 6892
Telephone: (08) 9358 8001
www.dmirs.wa.gov.au www.wa.gov.au

Contents

| | | |
|-----------|--|-----------|
| 1 | Equipment codes | 3 |
| 2 | Location codes | 3 |
| | 040 Exploration (not on a mine site) | 3 |
| | 100 Underground workplaces | 3 |
| | 200 Open pit production or development areas | 4 |
| | 300 Surface work areas – general | 4 |
| | 400 Treatment plant or ore processing | 5 |
| | 500 Crushed ore areas | 5 |
| | 600 Workshop surface | 6 |
| | 700 Railways | 6 |
| | 800 Power generation plant | 6 |
| | 900 Administration areas | 6 |
| 3 | Occupation codes | 7 |
| | 100000 Management and supervisory | 7 |
| | 200000 Underground production and services | 9 |
| | 300000 Mining production and services (surface – open pit) | 11 |
| | 400000 Ore treatment occupations | 12 |
| | 500000 Railway operations occupations | 13 |
| | 600000 Metal working progressing trades | 13 |
| | 700000 Electrical or electronic trades | 14 |
| | 800000 Miscellaneous trades or utilities | 15 |
| | 900000 Material handling – stores or warehouse occupations | 16 |
| 4 | Atmospheric agent codes | 17 |
| 5 | Biological agent codes | 23 |
| 6 | Noise dosimetry agent codes | 24 |
| 7 | Drilling method codes | 24 |
| 8 | Personal protective equipment references | 24 |
| 9 | Hearing protective equipment codes | 26 |
| 10 | Sample timing codes (biological monitoring) | 26 |
| 11 | Conversion of gas measurements | 26 |

1 Equipment codes

| Equipment code | Sampling equipment |
|----------------|----------------------------|
| 7H | 7-hole sample head |
| AS | Asbestos sample head |
| C2 | Cyclone (2.2 L/min) |
| C3 | Cyclone (3 L/min) |
| CA | Aluminium cyclone |
| DM | Diesel particulate monitor |
| DT | Detector tube |
| ED | Electronic device |

| Equipment code | Sampling equipment |
|----------------|----------------------------|
| FC | Filter cassette |
| IO | IOM sample head |
| IP | Impinger |
| PM | Passive monitor |
| PPI | Parallel particle impactor |
| SB | Sample bag |
| ST | Sorbent or sample tube |

2 Location codes

040 Exploration (not on a mine site)

100 Underground workplaces

| 110 | Underground access or haulage ways | |
|-----|---|--------------------------------|
| | 111 | Brace or winder building |
| | 112 | Shaft |
| | 113 | Plat |
| | 114 | Decline, adit or drift |
| | 115 | Haul road or level |
| | 116 | Conveyor road |
| | 117 | Ladder way |
| | 118 | Return airways |
| 120 | Underground production or development areas | |
| | 121 | Underground face area (coal) |
| | 122 | Underground stope |
| | 125 | Loading pocket |
| | 126 | Raise (development) |
| | 127 | Decline or winze (development) |
| | 128 | Level (development) |
| | 129 | Capital (development) |
| 130 | Underground workshops | |
| 140 | Pump chamber | |
| 150 | Underground storage areas | |

| | | |
|------------|---|--------------------------------|
| | 151 | Fuel storage |
| | 152 | Explosives magazines |
| | 153 | Underground stores – general |
| 160 | Underground ore or waste dumping | |
| | 161 | Ore, waste tip or pass area |
| | 162 | Grizzly |
| | 163 | Mill hole |
| 170 | Underground crushing area | |
| 180 | Ancillary locations | |
| | 181 | Crib room |
| | 182 | Latrine |
| 190 | Underground NOC | |
| | 199 | Underground – place not stated |

200 Open pit production or development areas

| | | |
|------------|---------------------------------|-----------------------------|
| 210 | Face loading area | |
| 220 | Bench area not haul road | |
| | 221 | Drill pattern area |
| | 222 | Heavy vehicle park up area |
| 230 | Haul road | |
| | 231 | Haul road – level |
| | 232 | Haul road – ramp or incline |
| 240 | Waste dump area | |
| 250 | Ore tipping area | |
| 260 | In pit crushing | |
| | 261 | In pit crusher area |
| | 262 | In pit conveyors |
| 270 | Stockpile – run of mine | |
| 280 | Salt production areas | |
| 290 | Open cut NOC | |
| | 291 | Dredge |
| | 299 | Open cut – place not stated |

300 Surface work areas – general

| | | |
|------------|---|--|
| 310 | Mine access road / not haul road | |
| 320 | Park up areas / heavy vehicles / plant | |
| 330 | Warehouse / stores | |

| | | |
|------------|-------------------------------------|-----------------------------------|
| 340 | Explosives magazine | |
| 350 | Fuel storage area | |
| 360 | Laboratory | |
| 370 | Storage yard or rebuild area | |
| 380 | Lube bay or service bay | |
| | 381 | Wash down area |
| 390 | Surface general area NOC | |
| | 399 | Surface general area – not stated |

400 Treatment plant or ore processing

| | | |
|-----|--|--|
| 411 | Process control rooms | |
| 413 | Crushing, screening or conveyor | |
| 416 | Heap, vat or in-situ leaching | |
| 419 | Grinding or classification | |
| 422 | Gravity concentration or magnetic separation | |
| 425 | Flotation | |
| 428 | Leaching | |
| 431 | Solvent extraction, scrubbers or strippers | |
| 434 | Filters, presses or wet screening | |
| 437 | Thickening or clarification | |
| 439 | Crystallisation, nucleation or ion exchange | |
| 441 | Electrowinning or cell house | |
| 444 | Smelter, roaster or furnace areas | |
| 447 | Gold room and elution facilities | |
| 451 | Tailings storage facility | |
| 454 | Product packaging or storage | |
| 457 | Sample plant or station | |
| 461 | Reagent or raw material storage areas | |
| 464 | Reagent or raw materials preparation plants | |
| 467 | Water treatment plants | |
| 471 | Processing plant other | |

500 Crushed ore areas

| | | |
|------------|-----------------------------------|------------------------------|
| 510 | Stockpiles | |
| | 511 | Stockpile access roads |
| 520 | Train loading or unloading | |
| | 521 | Train loader or loading area |

| | | |
|-----|------------------------------|--------------------------------|
| | 522 | Train unloader or tippler area |
| 530 | Stacker or reclaimer area | |
| 540 | Stacker or reclaim conveyors | |
| 550 | Wharf area | |
| | 551 | Shiploader wharf |
| | 552 | Conveyors wharf |

600 Workshop surface

| | | |
|-----|------------------------------------|--|
| 610 | Workshop heavy equipment | |
| 620 | Workshop electrical or instruments | |
| 630 | Workshop railway | |
| 640 | Workshop auto or light vehicles | |
| 650 | Workshop boilermakers | |
| 660 | Workshop painters or carpenters | |
| 670 | Workshop tyre fitting | |
| 680 | Workshop belt repairs | |
| 690 | Workshop NOC | |

700 Railways

| | | |
|-----|---------------------|-----------------------|
| 710 | Main line | |
| | 711 | Main line – on track |
| | 712 | Main line – off track |
| 720 | Siding | |
| | 721 | Siding – on track |
| | 722 | Siding – off track |
| 730 | Railway access road | |
| 740 | Railway yard | |

800 Power generation plant

| | | |
|-----|------------------------------|--|
| 810 | Control room | |
| 820 | Distribution or sub-stations | |
| 830 | Engine room | |

900 Administration areas

| | | |
|-----|-------------------------------------|--|
| 910 | Offices or administration buildings | |
| 920 | Crib room, canteen or mess | |
| 930 | Showers or change room | |

| | |
|-----|----------------------|
| 940 | Lamproom |
| 950 | Car park |
| 960 | Pathways |
| 970 | Gardens |
| 990 | Administration – NOC |

3 Occupation codes

100000 Management and supervisory

| | | |
|---------------|--|--------------------------------------|
| 110000 | General management occupations | |
| | 111000 | Financial manager |
| | 112000 | Personnel manager |
| | 113000 | Sales manager |
| | 114000 | Purchasing manager |
| | 115000 | Manager NOC |
| 120000 | Engineering occupations | |
| | 121000 | Mining engineer |
| | 122000 | Mechanical engineer |
| | 123000 | Civil engineer |
| | 124000 | Chemical engineer |
| | 125000 | Metallurgical engineer |
| | 126000 | Petroleum engineer |
| | 129000 | Engineer NOC |
| 130000 | Professional and related occupations | |
| | 131000 | Chemist |
| | 132000 | Geologist |
| | 133000 | Metallurgist |
| | 134000 | Environmental scientist or assistant |
| | 135000 | Surveyor |
| | 136000 | Draftsman |
| | 137000 | Health or medical occupations |
| | | 137100 Doctor |
| | | 137200 Occupational health nurse |
| | | 137300 First aid attendant |
| | 138000 | Industrial hygienist |
| | 139000 | Professional and related NOC |
| 140000 | Management or administration services | |

| | | |
|---------------|------------------------------------|--|
| | 141000 | Security officer |
| | 142000 | Safety officer |
| | 143000 | Training officer |
| | 144000 | Personnel officer |
| | 145000 | Clerical or secretarial occupations |
| | 146000 | Township or accommodation occupations |
| | 146100 | Caretaker |
| | 146200 | Housekeeper or cleaner |
| | 146300 | Handyman |
| | 146400 | Gardener |
| | 146500 | Groundsman |
| | 146900 | Township or accommodation occupations NOC |
| | 147000 | Catering occupations |
| | 147100 | Cook |
| | 147200 | Catering assistant |
| | 147300 | Kitchen hand |
| | 147400 | Canteen attendant |
| | 147900 | Catering occupations NOC |
| | 148000 | Cleaning or laundering occupations |
| | 148100 | Cleaners |
| | 148200 | Change house attendant |
| | 149000 | Manager or administrative services occupations NOC |
| 150000 | Mine management occupations | |
| | 151000 | Mine manager |
| | 152000 | Underground manager |
| | 153000 | Assistant underground manager |
| | 154000 | Under manager |
| | 155000 | Mine or pit superintendent |
| | 159000 | Mine management occupations NOC |
| 160000 | Supervisory occupation | |
| | 161000 | Deputy (coal) |
| | 162000 | Foreman or shift boss underground |
| | 163000 | Foreman or shift foreman surface |
| | 164000 | Overman (coal) |
| | 165000 | Supervisor |
| 170000 | Prospector | |

200000 Underground production and services

| 210000 | Miners production or development (underground) | |
|--------|---|-------------------------------------|
| | 211000 | Contract miners |
| | | 211100 Stope miner |
| | | 211110 Stope miner – handheld |
| | | 211120 Stope miner – jumbo |
| | 211200 | Development miner |
| | | 211210 Development miner – handheld |
| | | 211220 Development miner – jumbo |
| | 211300 | Shaft sinker |
| | | 211310 Shaft sinker – handheld |
| | | 211320 Shaft sinker – jumbo |
| | 212000 | Coal miner (underground) |
| | | 212100 Composite miner |
| | | 212200 Continuous miner driver |
| | | 212300 Machineman |
| | | 212400 Coal miner NOC |
| | | 212500 Borer / shotfirer |
| | | 212600 Shiftman |
| | 213000 | Non-contract miners (underground) |
| | | 213100 Miner – handheld |
| | | 213200 Miner – jumbo |
| | | 213300 Popper machineman |
| | 214000 | Trainee miner |
| | 215000 | Miner NOC |
| | 216000 | Miner assistant |
| 220000 | Long hole drill and blast occupations (underground) | |
| | 221000 | Long hole drill operator |
| | 222000 | Long hole driller assistant |
| | 223000 | Shotfirer |
| | 224000 | Shotfirer assistant (charging) |
| 230000 | Diamond driller / raiseborers | |
| | 231000 | Diamond drill operator |
| | 232000 | Diamond drillers assistant |
| | 233000 | Raiseborer operator |
| | 234000 | Raiseborer assistant |
| 240000 | Loading / transport occupations (underground) | |

| | | | |
|---------------|--|--|--------------------------|
| | 241000 | Diesel loader operator | |
| | 243000 | Scraper operator | |
| | 244000 | Locomotive driver | |
| | 245000 | Truck driver | |
| | 246000 | Plant operator | |
| | | 246100 | Bobcat driver |
| | | 246200 | Grader driver |
| | 247000 | Underground personnel transport driver | |
| | 248000 | Conveyor attendant or operator | |
| | 249000 | Trucker | |
| | 249900 | Loading or transport occupations NOC | |
| 250000 | Ground / roof support occupations (underground) | | |
| | 251000 | Timberman | |
| | 252000 | Roofbolter | |
| | 253000 | Hydraulic fill operator | |
| 260000 | Services occupations (underground) | | |
| | 261000 | Ventilation occupations | |
| | | 261100 | Ventilation officer |
| | | 261200 | Ventilation man |
| | 262000 | Tracklayer or platelayer | |
| | 263000 | Pipefitter | |
| | 264000 | Pumpman or pump attendant | |
| | 265000 | Nipper or salvageman / utilityman | |
| | 266000 | Underground crushing operator | |
| | | 266100 | Grizzlyman / pass runner |
| | 267000 | Underground labourer / tool carrier | |
| | 268000 | Sanitaryman | |
| | 269000 | Underground services occupation NOC | |
| | | 269100 | Scaler |
| 270000 | Underground winding & hoisting occupations | | |
| | 271000 | Winding engine driver | |
| | 272000 | Hoist driver | |
| | 273000 | Platman | |
| | 274000 | Skipman | |
| | 275000 | Braceman | |
| | 276000 | Brakeman | |
| | 277000 | Onsetter | |

| | | |
|--|--------|--------------------------------------|
| | 279000 | Winding and hoisting occupations NOC |
|--|--------|--------------------------------------|

300000 Mining production and services (surface – open pit)

| | | |
|---------------|---|--|
| 310000 | Blast hole drilling surface | |
| | 311000 | Blast hole drill operator |
| | 312000 | Blast hole drill operators assistant |
| | 313000 | Air track or crawl air driller |
| | 314000 | Sniper drill operator (rubber tyred) |
| 320000 | Charging and blasting (surface) | |
| | 321000 | Powder monkey / leading hand / shotfirer |
| | 322000 | Powder truck driver |
| | 323000 | Powder crew labourer |
| 330000 | Exploration drilling (surface) | |
| | 331000 | Driller |
| | 332000 | Driller assistant |
| 340000 | Excavation equipment operators (surface) | |
| | 341000 | Bucketwheel operator |
| | 342000 | Bucketwheel operator assistant |
| | 343000 | Dragline operator |
| | 344000 | Rope shovel operator |
| | 346000 | Hydraulic excavator operator |
| | 347000 | Dredge operator |
| | 348000 | Front end loader operator |
| | 349000 | Excavation equipment operator NOC |
| 350000 | Mobile plant operator (surface) | |
| | 351000 | Bulldozer operator |
| | 352000 | Grader driver |
| | 353000 | Backhoe operator |
| | 354000 | Scraper driver |
| | 359000 | Mobile plant operator NOC |
| 360000 | Driving occupations (surface) | |
| | 361000 | Haulage truck driver |
| | 362000 | Water truck driver |
| | 363000 | Explosives truck driver |
| | 364000 | Fuel / grease /service truck driver |
| | 365000 | Hiab truck driver |
| | 366000 | Passenger vehicle driver / bus driver |

| | | |
|---------------|--|-----------------------------------|
| | 367000 | Equipment transport driver |
| | 369000 | Driver NOC |
| 370000 | Open cut service occupations | |
| | 371000 | Greaser / oiler |
| | 372000 | Quarry labourer or labourer |
| | 373000 | Fuel and lubrication serviceman |
| | 374000 | Wash bay operator |
| | 375000 | Dump spotter |
| | 376000 | Weighbridge operator |
| | 377000 | Surveyors assistant – chainman |
| | 378000 | Field assistant pit tech, sampler |
| | 379000 | Mine worker NOC |
| 390000 | Contractor or contractors employees NOC | |

400000 Ore treatment occupations

| | | |
|---------------|---|---|
| 410000 | Final product handling / transport occupations | |
| | 411000 | Processing plant operator |
| | 412000 | Processing plant serviceman |
| | 413000 | Processing plant utility worker |
| 420000 | Mobile plant occupations | |
| | 422000 | Mobile plant operator NOC |
| 430000 | Final product handling / transport occupations | |
| | 431000 | Final product packer / loader / dumper operator |
| | 432000 | Final product warehouse operator |
| | 433000 | Final product handling or transport NOC |
| 440000 | Sampling, assay, laboratory occupations | |
| | 441000 | Laboratory technician / assistant / analyst |
| | 442000 | Sample preparation operator |
| | 443000 | Sampler / sample plant operator |

500000 Railway operations occupations

| | | |
|---------------|-----------------------------------|------------------------------------|
| 510000 | Railway controller | |
| 520000 | Locomotive crews | |
| | 521000 | Locomotive driver |
| | 522000 | Observer |
| | 523000 | Trainee observer |
| | 524000 | Shunter locomotive driver |
| 530000 | Track laying / maintenance | |
| | 531000 | Ganger |
| | 532000 | Platelayer |
| | 533000 | Track maintenance machine operator |
| | 534000 | Track labourer |
| 540000 | Car and wagon examiner | |
| 550000 | Railway yardman | |

600000 Metal working progressing trades

| | | |
|---------------|---------------------------------|----------------------------|
| 610000 | Sheet metal trades | |
| | 611000 | Metal patternmaker |
| | 612000 | Sheet metal worker |
| | 613000 | Coppersmith |
| | 614000 | Guillotine operator |
| | 615000 | Millwright |
| 620000 | Metal machining trades | |
| | 621000 | Metal machinist |
| | 622000 | Fitter and turner |
| 630000 | Fitters mechanical | |
| | 631000 | Fitter |
| | 632000 | Fitter – welder |
| | 633000 | Fitter – diesel |
| | 634000 | Fitter – pipe |
| 640000 | Structural steel trades | |
| | 641000 | Boilermaker welder |
| | 642000 | Boilermaker |
| | 643000 | Welder |
| 650000 | Metal trades apprentices | |
| | 651000 | Sheet metal apprentice |
| | 652000 | Metal machining apprentice |

| | | |
|---------------|-------------------------|----------------------------------|
| | 653000 | Fitters apprentice |
| | 654000 | Boilermakers apprentice |
| | 659000 | Apprentice NOC |
| 660000 | Trades assistant | |
| 690000 | Metal trades | |
| | 691000 | Tool and dye setter |
| | 692000 | Saw setter |
| | 693000 | Electroplater |
| | 694000 | Blacksmith |
| | 695000 | Shipwright |
| | 696000 | Instrument artificer |
| | 697000 | Lamp room mechanic and assistant |
| | 698000 | Toolmaker |
| | 699000 | Drill doctor |

700000 Electrical or electronic trades

| | | |
|---------------|--|------------------------------|
| 710000 | Electrical trades | |
| | 711000 | Linesman |
| | 712000 | Electrical fitter |
| | 712100 | Cable splicer |
| | 713000 | Electrical mechanic |
| | 714000 | Automotive electrician |
| | 715000 | Refrigeration mechanic |
| | 716000 | Air-conditioning mechanic |
| | 717000 | Electrical installer |
| | 718000 | Lift mechanic |
| | 719000 | Electrician NOC |
| 720000 | Electronic trades | |
| | 721000 | Radio technician |
| | 722000 | Telecommunication technician |
| | 723000 | Telecommunication trainee |
| | 724000 | Signals technician |
| | 725000 | Instrument technician |
| 730000 | Electrical / electronic apprentices | |
| | 731000 | Electrical apprentice |
| | 732000 | Electronic apprentice |
| 790000 | Electrical trades assistant | |

| | | |
|--|--------|-----------------------------|
| | 791000 | Electrical trades assistant |
|--|--------|-----------------------------|

800000 Miscellaneous trades or utilities

| | | |
|---------------|--|-----------------------------------|
| 810000 | Construction trades | |
| | 811000 | Bricklayer |
| | 812000 | Carpenter or joiner |
| | 813000 | Painter |
| | 814000 | Plasterer or tiler |
| | 815000 | Plumber or drainer |
| | 816000 | Rigger or rope splicer |
| | 817000 | Scaffolder |
| | 818000 | Construction trades apprentice |
| | 819000 | Construction trades assistant |
| 820000 | Conveyor belt repair occupations | |
| | 821000 | Belt repairer |
| | 822000 | Belt repairer assistant |
| | 823000 | Trainee belt repairer |
| 830000 | MOTOR / ENGINE TRADES | |
| | 831000 | Motor mechanic |
| | 832000 | Diesel motor mechanic |
| | 833000 | Brake mechanic |
| | 834000 | Tyre fitter |
| | 835000 | Panel beater |
| | 836000 | Spray painter |
| | 837000 | Mechanic NOC |
| | 838000 | Trades assistant |
| | 839000 | Sand blaster |
| 840000 | Power plant operators | |
| | 841000 | Power plant engine driver |
| | 842000 | Power plant trainee engine driver |
| | 843000 | Power plant greaser |
| | 844000 | Boiler attendant |
| | 845000 | Fireman |
| 850000 | Water treatment plant operator | |
| 860000 | Waste disposal equipment operator | |
| 870000 | Gas supply service operator | |
| 890000 | Utility operator NOC | |

900000 Material handling – stores or warehouse occupations

| | | |
|---------------|----------------------------------|--|
| 910000 | Crane driving occupations | |
| | 911000 | Mobile crane driver |
| | 912000 | Tower crane driver |
| | 913000 | Overhead crane driver (cabin controlled) |
| | 914000 | Crane driver NOC |
| | 915000 | Dogman or cranechaser |
| 920000 | Fork lift operator | |
| 930000 | Storeman NOC | |
| | 931000 | Toolstore attendant |
| 990000 | Non-mining occupations | |
| | 991000 | Seafaring occupation |
| | 992000 | Farming occupations |

4 Atmospheric agent codes

| Agent description | Agent code | Sampling equipment | Time Weighted Average (TWA) | | PEAK | | Short term exposure limit (STEL) | | Unit of measurement | Exposure standard adjustment category |
|--|------------|-----------------------------|-----------------------------|-------------------|--------------------|-------------------|----------------------------------|-------------------|---------------------|---------------------------------------|
| | | | Limit of detection | Exposure standard | Limit of detection | Exposure standard | Limit of detection | Exposure standard | | |
| 1,1,1-Trichloroethane | TCE | PM, SB, ST | 0.04 | 100 | | | 0.04 | 200 | ppm | 4 |
| 1,1,2,2-Tetrabromoethane | TBE | PM, SB, ST | 0.1 | 1 | | | | | ppm | 4 |
| Acetaldehyde | ACD | PM, SB, ST | 0.04 | 20 | | | | | ppm | 1 |
| Acetone | ACT | PM, SB, ST | 0.2 | 500 | | | 0.2 | 1000 | ppm | 1 |
| Actinolite | ACN | AS | 0.01 | 0.1 | | | | | f/mL | 3 |
| Aldehyde | ALD | PM, SB, ST | 0.04 | 1 | | | | | ppm | 1 |
| Aluminium (metal dust or oxide, as Al) | ALM | 7H, C2, C3, CA, PPI, FC, IO | 0.004 | 10 | | | | | mg/m3 | 1 |
| Aluminium welding fume (as Al) | ALW | 7H, FC, IO | 0.004 | 5 | | | | | mg/m3 | 1 |
| Ammonia | NH3 | ED, IP, PM, SB, ST | 0.06 | 25 | | | 0.06 | 35 | ppm | 1 |
| Amosite | AMS | AS | 0.01 | 0.1 | | | | | f/mL | 3 |
| Anthophyllite | ANT | AS | 0.01 | 0.1 | | | | | f/mL | 3 |
| Antimony | SB | 7H, C2, C3, CA, PPI, IO | 0.001 | 0.5 | | | | | mg/m3 | 3 |
| Arsenic | AS | 7H, IO | 0.001 | 0.05 | | | | | mg/m3 | 3 |
| Asbestos | ASB | AS | 0.01 | 0.1 | | | | | f/mL | 3 |
| Benzene | BNZ | ED, PM, SB, ST | 0.2 | 1 | | | | | ppm | 3 |
| Bromoform | BRO | PM, SB, ST | 0.02 | 0.5 | | | | | ppm | 4 |
| Cadmium | CD | 7H, IO | 0.001 | 0.01 | | | | | mg/m3 | 3 |
| Calcium carbonate (limestone) | LST | 7H, IO | 0.1 | 10 | | | | | mg/m3 | 1 |
| Calcium hydroxide (slaked lime) | LIM | 7H, IO | 0.1 | 5 | | | | | mg/m3 | 1 |
| Calcium oxide (quicklime) | CAO | 7H, IO | 0.004 | 2 | | | | | mg/m3 | 1 |
| Calcium sulphate (gypsum) | GYP | 7H, IO | 0.1 | 10 | | | | | mg/m3 | 1 |

| Agent description | Agent code | Sampling equipment | Time Weighted Average (TWA) | | PEAK | | Short term exposure limit (STEL) | | Unit of measurement | Exposure standard adjustment category |
|---|------------|---------------------------------|-----------------------------|-------------------|--------------------|-------------------|----------------------------------|-------------------|---------------------|---------------------------------------|
| | | | Limit of detection | Exposure standard | Limit of detection | Exposure standard | Limit of detection | Exposure standard | | |
| Carbon black | CRB | 7H, C2, C3, CA, PPI, IO | 0.1 | 3 | | | | | mg/m3 | 3 |
| Carbon dioxide | CO2 | DT, ED, SB, ST | 1 | 5000 | | | 1 | 30000 | ppm | 1 |
| Carbon disulphide | CS2 | SB, ST | 0.002 | 10 | | | | | ppm | 4 |
| Carbon monoxide | CO | DT, ED, SB, ST | 0.07 | 30 | | | | | ppm | 4 |
| Chlorine | CL2 | FC, IO, IP | | | 0.001 | 1 | | | ppm | 1 |
| Chromium (metal or compounds, as Cr) | CRM | 7H, IO | 0.001 | 0.5 | | | | | mg/m3 | 3 |
| Chromium (VI) compounds (as Cr) | CR | 7H, IO | 0.001 | 0.05 | | | | | mg/m3 | 3 |
| Chrysotile | CHR | AS | 0.01 | 0.1 | | | | | f/mL | 3 |
| Coal dust (<5% silica/quartz) | COL | C2, C3, CA, PPI | 0.1 | 3 | | | | | mg/m3 | 3 |
| Cobalt | COB | 7H, C2, C3, CA, PPI, IO | 0.001 | 0.05 | | | | | mg/m3 | 3 |
| Copper (dust or mist, as Cu) | CU | 7H, IO | 0.001 | 1 | | | | | mg/m3 | 2 |
| Copper (fume, as Cu) | CUF | 7H, IO | 0.001 | 0.2 | | | | | mg/m3 | 2 |
| Crocidolite | CRO | AS | 0.01 | 0.1 | | | | | f/mL | 3 |
| Cyanides (as Cn) | CYN | 7H, IO | 0.02 | 5 | | | | | mg/m3 | 2 |
| Diesel particulate matter (as elemental carbon) | DP | 7H, C2, C3, CA, PPI, DM, FC, IO | 0.01 | 0.1 | | | | | mg/m3 | 3 |
| Diisobutyl ketone (DIBK) | DBK | PM, SB, ST | 0.0009 | 25 | | | | | ppm | 1 |
| Ethanol | ETL | PM, SB, ST | 0.1 | 1000 | | | | | ppm | 1 |
| Ethyl acetate | ETA | PM, SB, ST | 0.003 | 200 | | | 0.003 | 400 | ppm | 1 |
| Ferrovandium dust | FVA | 7H, IO | 0.002 | 1 | | | 0.002 | 3 | mg/m3 | 1 |
| Fluorides (as F) | FLD | 7H, IO, IP | 0.5 | 2.5 | | | | | mg/m3 | 3 |
| Formaldehyde | FHD | IP, PM, SB, ST | 0.02 | 1 | | | 0.02 | 2 | ppm | 1 |

| Agent description | Agent code | Sampling equipment | Time Weighted Average (TWA) | | PEAK | | Short term exposure limit (STEL) | | Unit of measurement | Exposure standard adjustment category |
|---------------------------------------|------------|-------------------------|-----------------------------|-------------------|--------------------|-------------------|----------------------------------|-------------------|---------------------|---------------------------------------|
| | | | Limit of detection | Exposure standard | Limit of detection | Exposure standard | Limit of detection | Exposure standard | | |
| Graphite (non-fibrous) | GRT | C2, C3, CA, PPI | 0.1 | 3 | | | | | mg/m3 | 3 |
| Hydrogen chloride | HCL | DT, FC, IP, ST | | | 0.008 | 5 | | | ppm | 1 |
| Hydrogen cyanide | HCN | ED, IP, PM, ST | | | 0.01 | 10 | | | ppm | 1 |
| Hydrogen fluoride (as F) | HF | DT, FC, IP, ST | | | 0.01 | 3 | | | ppm | 1 |
| Hydrogen sulphide | H2S | DT, ED, FC, IP, ST | 0.1 | 10 | | | 0.1 | 15 | ppm | 1 |
| Inhalable dust | INH | 7H, IO | 0.1 | 10 | | | | | mg/m3 | 3 |
| Iron oxide (fume, as Fe) | FEO | 7H, IO | 0.001 | 5 | | | | | mg/m3 | 3 |
| Isobutyl alcohol | IBA | ED, PM, SB, ST | 0.07 | 50 | | | | | ppm | 1 |
| Isocyanates (as NCO) | ISO | 7H, ED, FC, IO, IP, ST | 0.001 | 0.02 | | | 0.001 | 0.07 | mg/m3 | 3 |
| Isopropyl alcohol | IPA | ED, PM, SB, ST | 0.08 | 400 | | | 0.08 | 500 | ppm | 2 |
| Lead, inorganic dusts and fumes | PB | 7H, IO | 0.001 | 0.05 | | | | | mg/m3 | 3 |
| Magnesium oxide (as Mg) | MGO | 7H, IO | 0.001 | 10 | | | | | mg/m3 | 2 |
| Manganese (fume, as Mn) | MNF | 7H, IO | 0.001 | 1 | | | 0.001 | 3 | mg/m3 | 4 |
| Manganese (metal or compounds, as Mn) | MN | 7H, IO | 0.001 | 1 | | | | | mg/m3 | 4 |
| Mercury | HG | ED, FC, PM, ST | 0.001 | 0.025 | | | | | mg/m3 | 3 |
| Methyl chloride | MEC | SB, ST | 0.1 | 50 | | | 0.1 | 100 | ppm | 1 |
| Methyl ethyl ketone (MEK) | MEK | DT, PM, ST | 0.03 | 150 | | | 0.03 | 300 | ppm | 1 |
| Methyl ethyl ketone peroxide | MKP | IP, ST | | | 0.04 | 0.2 | | | ppm | 1 |
| Methyl isobutyl ketone | MBK | DT, PM, ST | 0.1 | 50 | | | 0.1 | 75 | ppm | 1 |
| Methylene chloride | MNC | PM, ST | 0.06 | 50 | | | | | ppm | 4 |
| Mica | MIC | 7H, C2, C3, CA, PPI, IO | 0.1 | 2.5 | | | | | mg/m3 | 3 |
| Molybdenum | MO | 7H, IO | 0.001 | 5 | | | | | mg/m3 | 1 |

| Agent description | Agent code | Sampling equipment | Time Weighted Average (TWA) | | PEAK | | Short term exposure limit (STEL) | | Unit of measurement | Exposure standard adjustment category |
|--|------------|-------------------------------------|-----------------------------|-------------------|--------------------|-------------------|----------------------------------|-------------------|---------------------|---------------------------------------|
| | | | Limit of detection | Exposure standard | Limit of detection | Exposure standard | Limit of detection | Exposure standard | | |
| n-Butyl alcohol | NBA | PM, ST | | | 0.07 | 50 | | | ppm | 1 |
| n-Heptane | HEP | ED, PM, SB, ST | 0.05 | 400 | | | 0.05 | 500 | ppm | 2 |
| n-Hexane | HEX | ED, PM, SB, ST | 0.006 | 20 | | | | | ppm | 4 |
| Nickel (metal) | NI | 7H, C2, C3, CA, PPI, IO | 0.001 | 1 | | | | | mg/m3 | 3 |
| Nickel (soluble compounds, as Ni) | NSO | 7H, IO | 0.001 | 0.1 | | | | | mg/m3 | 3 |
| Nickel sulphide (fume or dust, as Ni) | NIS | 7H, IO | 0.002 | 1 | | | | | mg/m3 | 3 |
| Nitric acid | HNO | DT, FC, ST | 0.006 | 2 | | | 0.006 | 4 | ppm | 2 |
| Nitric oxide | NO | DT, ED, ST, PM | 0.02 | 25 | | | | | ppm | 3 |
| Nitrogen dioxide | NO2 | DT, ED, ST, PM | 0.01 | 3 | | | 0.01 | 5 | ppm | 4 |
| n-Propyl alcohol | NPA | PM | 0.08 | 200 | | | 0.08 | 250 | ppm | 1 |
| Octane | OCT | DT, PM, SB, ST | 0.04 | 300 | | | 0.04 | 375 | ppm | 2 |
| Oil mist (refined mineral oils) | OIL | 7H, FC, IO | 0.2 | 5 | | | | | mg/m3 | 3 |
| Perchloroethylene | PCE | DT, PM, SB, ST | 0.03 | 50 | | | 0.03 | 150 | ppm | 4 |
| Polycyclic aromatic hydrocarbons (PAH) | PAH | 7H, C2, C3, CA, PPI, DM, FC, IO, ST | 0.002 | 0.2 | | | | | mg/m3 | 3 |
| Respirable dust | RES | C2, C3, CA, PPI | 0.1 | 3 | | | | | mg/m3 | 3 |
| sec-Butyl alcohol | SBA | ST | 0.07 | 100 | | | | | ppm | 2 |
| Selenium | SE | 7H, IO | 0.02 | 0.1 | | | | | mg/m3 | 4 |
| Silica, amorphous | ASL | 7H, C2, C3, CA, PPI, IO | 0.1 | 2 | | | | | mg/m3 | 3 |
| Silica, crystalline (quartz) | SIL | C2, C3, CA, PPI | 0.01 | 0.1 | | | | | mg/m3 | 3 |
| Silver (metal) | AG | 7H, IO | 0.003 | 0.1 | | | | | mg/m3 | 3 |
| Soapstone (inhalable) | SPS | 7H, IO | 0.1 | 6 | | | | | mg/m3 | 3 |

| Agent description | Agent code | Sampling equipment | Time Weighted Average (TWA) | | PEAK | | Short term exposure limit (STEL) | | Unit of measurement | Exposure standard adjustment category |
|--|------------|-------------------------------------|-----------------------------|-------------------|--------------------|-------------------|----------------------------------|-------------------|---------------------|---------------------------------------|
| | | | Limit of detection | Exposure standard | Limit of detection | Exposure standard | Limit of detection | Exposure standard | | |
| Soapstone (respirable) | SPR | C2, C3, CA, PPI | 0.1 | 3 | | | | | mg/m3 | 3 |
| Sodium hydroxide | NAH | 7H, C2, C3, CA, PPI, FC, IO | | | 0.01 | 2 | | | mg/m3 | 1 |
| Styrene (monomer) | STY | PM, ST | 0.05 | 50 | | | 0.05 | 100 | ppm | 4 |
| Sulphur dioxide | SO2 | DT, ED, FC, IP, ST, PM | 0.1 | 2 | | | 0.1 | 5 | ppm | 1 |
| Sulphuric acid | HSO | 7H, C2, C3, CA, PPI, FC, IO, IP, ST | 0.01 | 1 | | | 0.01 | 3 | mg/m3 | 1 |
| Synthetic mineral fibres (SMF, as dust) | SMF | 7H, IO | 0.01 | 2 | | | | | mg/m3 | 3 |
| Synthetic mineral fibres (SMF, as fibrous) | RCF | FC | 0.01 | 0.5 | | | | | f/mL | 3 |
| Talc (fibrous) | TAF | AS | 0.01 | 0.1 | | | | | f/mL | 3 |
| Talc (non-fibrous) | TAD | 7H, C2, C3, CA, PPI, IO | 0.1 | 2.5 | | | | | mg/m3 | 3 |
| Tantalum | TAM | 7H, IO | 0.1 | 5 | | | | | mg/m3 | 1 |
| Tellurium | TE | 7H, IO, ST | 0.002 | 0.1 | | | | | mg/m3 | 4 |
| Thallium (soluble compounds, as Tl) | THA | 7H, IO | 0.003 | 0.1 | | | | | mg/m3 | 3 |
| Tin (metal) | TIN | 7H, IO | 0.004 | 2 | | | | | mg/m3 | 3 |
| Tin (oxide or inorganic compounds, as Sn) | SNO | 7H, IO | 0.002 | 2 | | | | | mg/m3 | 3 |
| Titanium dioxide | TID | 7H, IO | 0.001 | 10 | | | | | mg/m3 | 1 |
| Toluene | TOL | ED, IP, PM, SB, ST | 0.03 | 50 | | | 0.03 | 150 | ppm | 4 |
| Total dust | TOT | 7H, IO | 0.001 | 10 | | | | | mg/m3 | 3 |
| Total petroleum hydrocarbons (TPH) | TPH | ED, ST | 0.04 | 480 | | | | | mg/m3 | 3 |
| Trichloroethylene | TRI | DT, PM, SB, ST | 0.04 | 10 | | | 0.04 | 40 | ppm | 2 |

| Agent description | Agent code | Sampling equipment | Time Weighted Average (TWA) | | PEAK | | Short term exposure limit (STEL) | | Unit of measurement | Exposure standard adjustment category |
|-----------------------------|------------|-------------------------|-----------------------------|-------------------|--------------------|-------------------|----------------------------------|-------------------|---------------------|---------------------------------------|
| | | | Limit of detection | Exposure standard | Limit of detection | Exposure standard | Limit of detection | Exposure standard | | |
| Tungsten | TUN | 7H, IO | 0.002 | 1 | | | 0.02 | 10 | mg/m3 | 2 |
| Vanadium (as V2O5) | VAN | 7H, C2, C3, CA, PPI, IO | 0.01 | 0.05 | | | | | mg/m3 | 1 |
| Welding fumes | WLD | 7H, FC, IO | 0.1 | 5 | | | | | mg/m3 | 2 |
| Wood dust (hardwoods) | WDH | 7H, IO | 0.1 | 1 | | | | | mg/m3 | 3 |
| Wood dust (soft woods) | WDS | 7H, IO | 0.1 | 5 | | | | | mg/m3 | 3 |
| Xylene | XYL | ED, IP, PM, SB, ST | 0.05 | 80 | | | 0.05 | 150 | ppm | 2 |
| Zinc oxide (dust) | ZN | 7H, IO | 0.001 | 10 | | | | | mg/m3 | 1 |
| Zinc oxide (fume) | ZNF | 7H, IO | 0.001 | 5 | | | | | mg/m3 | 2 |
| Zirconium compounds (as Zr) | ZRC | 7H, IO | 0.004 | 5 | | | 0.004 | 10 | mg/m3 | 1 |

Note: NOC = not otherwise classified

5 Biological agent codes

| Agent description | Agent code | Biological sample | Gender | Biological Exposure Indices (BEI)* | Unit of measurement |
|--|-------------------|-------------------|----------------------------------|------------------------------------|---------------------|
| 1-hydroxypyrene | Hpy_bio (Urine) | Urine | Both | Guidance value only (GV**) | µmol/mol |
| Arsenic (inorganic) and methylated metabolites | As-In_bio (Urine) | Urine | Both | 35 | µg As/L |
| Arsenic (total) as index of inorganic arsenic and methylated metabolites | As_bio (Urine) | Urine | Both | 35 *** | µg As/L |
| Cadmium | Cd_bio (blood) | Blood | Both | 5 | µg Cd/L |
| Cadmium | Cd_bio (Urine) | Urine | Both | 5 | µg Cd/g creatinine |
| Chromium | Cr_bio (Urine) | Urine | Both | 25 | µg Cr/L |
| Cobalt | Co_bio (Urine) | Urine | Both | 15 | µg Co/L |
| Lead | Pb_bio (Blood) | Blood | Female/ reproductive capacity | 10 | µg Pb/dL |
| Lead | Pb_bio (Blood) | Blood | Male | 30 | µg Pb/dL |
| Manganese | Mn_bio (Blood) | Blood | Both | GV | µg Mn/dL |
| Manganese | Mn_bio (Urine) | Urine | Both | GV | µg Mn/g creatinine |
| Mercury | Hg_bio (Urine) | Urine | Both | 35 | µg Hg/g creatinine |
| Mercury | Hg_bio (Blood) | Blood | Both | 15 | µg Hg/L |
| Nickel | Ni_bio (Urine) | Urine | Both | GV | µg Ni/L |
| Selenium | Se_bio (Blood) | Blood | Both | GV | µg Se/dL |
| Selenium | Se_bio (Urine) | Urine | Both | GV | mg Se/g creatinine |
| Thallium | Tl_bio (blood) | Blood | Both | GV | µg Tl/L |
| Thorium | Th_bio (Blood) | Blood | Both | 200 | µg Th/L |
| Thorium | Th_bio (Urine) | Urine | Both | 1000 | µg Th/L |
| Uranium | U_bio (Urine) | Urine | Both | 200 | µg U/L |
| Vanadium | V_bio (blood) | Blood | Both | 50 | µg V/L |

*Refer to the latest ACGIH TLVs and BEIs for current BEIs and recommended sampling time.

** In the absence of ACGIH published BEIs, a site-specific GV may be assigned, that is based on a site-specific health risk assessment. In such cases increasing concentrations of metals in biological media, may be used to assess exposure management effectiveness. In the absence of extensive epidemiology, a GV would not provide reliable information on risk of disease development.

*** If the total arsenic concentration exceeds 35 µg As/L it is necessary to carry out further analytical testing to determine the exposure to inorganic arsenic from mining, to differentiate from less hazardous dietary sources of organic arsenic.

6 Noise dosimetry agent codes

| Agent description | Agent code | Action level | Unit of measurement |
|-------------------|--------------|--------------|---------------------|
| Noise 8h average | Noise_LAeq8h | 85 | dB(A) |
| Noise peak | Noise_Lpeak | 140 | dB(Z)* |

* Peak measurements historically as dB(lin) have been superseded by dB(Z) in lieu of manufacturer specifications based on current filters. Unweighted, flat or linear are equivalent to dB(Z) for peak measurements.

7 Drilling method codes

| Code | Description |
|------|-----------------------------|
| AIR | Aircore |
| AUG | Hand auger |
| BULL | Bulldozer |
| CLO | Core logging |
| DIA | Diamond drill |
| DIAP | Percussive diamond drilling |

| Code | Description |
|------|---------------------------|
| DW | Ditch witch |
| GDR | Grader |
| HS | Hand sampling |
| RAB | Rotary air blast drill |
| RC | Reverse circulation drill |

8 Personal protective equipment references

The following table lists hearing protectors and provides information on class rating and expected attenuation, based on specifications outlined in Australian Standard AS 1269.3 *Occupational noise management – Part 3 Hearing protector program*.

| What PPE was being correctly worn? Refer to AS 1269.3 | | |
|--|--------------------------------|-------------------------------------|
| Type | Class rating | Expected attenuation SLC80 range |
| None worn | No further information | 0 |
| Ear plugs Ear muffs | 1 | 10 to 13 |
| | 2 | 14 to 17 |
| | 3 | 18 to 21 |
| | 4 | 22 to 25 |
| | 5 | 26 or greater |
| Double protection | Class with highest attenuation | + 5dB |

The following table lists commonly used respiratory protective equipment and provides guidance on applicable protection factor and class rating, based on information outlined in Australian Standard AS 1715

Selection, use and maintenance of respiratory protective equipment. Consult packages or your supplier for information specific to the respiratory equipment provided to employees.

| Respiratory protective equipment – mechanically/thermally generated particulates | | | |
|---|--|--|---------------------|
| Refer AS 1715 | | | |
| Protection factor | Type | Filter type | Class rating |
| Up to 10 | Half-face – replaceable filter | P1 | 1 |
| | | P2 | 2 |
| | | P3 | 3 |
| | Disposable mask | P1 | 1 |
| | | P2 | 2 |
| | Powered air purifying respirator (PAPR) <ul style="list-style-type: none"> • Head cover or • Full-face | P1 | 1 |
| Up to 50 | Full-face PAPR – head cover | P2 | 2 |
| | PAPR – head cover | P3 | 3 |
| | Half-face positive pressure | P3 | 3 |
| Up to 100 | Full-face Full-face with air-hose | P3 | 3 |
| | 100+ | PAPR – head cover and blouse or Full-face | P3 |
| | | PAPR – head cover with positive pressure/air hose/blower | P3 |

When combined with a gas and vapour filter, the protection factor provided is dependent on the type of face piece, head cover, whether a blouse or positive air pressure is applied. Refer to AS 1715 for further advice and consult your supplier for detailed information on protection factors specific to the exact combination of particulate filter used with a gas and vapour filter.

| Respiratory protective equipment – gas and vapour filters | |
|--|--|
| Refer AS 1715 | |
| Type | Examples of contaminants |
| A (All classes) | Organic vapours > 65°C boiling point |
| AX | Low boiling point organic solvents < 65°C – dimethyl ether, vinyl chloride |
| B1 (AUS) | Acid gases – chlorine sterilisation, manufacture of chemicals, chlorinated compounds |
| B2 | Acid gases and hydrogen cyanide (HCN) – gold ore refining |
| B3 | Acid gases and hydrogen cyanide (HCN) – HCN fumigation |
| E | Sulphur dioxide (SO ₂) – foundries, smelting of metals |
| G | Agricultural chemicals |
| Hg | Mercury – from metallic mercury mining and handling, |

| Respiratory protective equipment – gas and vapour filters Refer AS 1715 | |
|--|---|
| Type | Examples of contaminants |
| K | Ammonia – explosives, plastics, chemical plants |
| MB | Methyl bromides – fumigation |
| NO | Nitric oxides |
| Specific chemical filters are also available | Chemicals not listed above |

9 Hearing protective equipment codes

| Code | Description |
|-------|------------------------|
| CPM | Combined Plug and Muff |
| EM | Ear Muffs |
| EP | Ear Plugs |
| None | None Worn |
| Other | Other |

10 Sample timing codes (biological monitoring)

| Code | Description |
|-------------------|----------------------|
| EndOfShift | End of Shift |
| EndOfWorkRoster | End of Work Roster |
| StartOfShift | Start of Shift |
| StartofWorkRoster | Start of Work Roster |
| SpotSample | Spot Sample |

11 Conversion of gas measurements

The conversion equations of mg/m³ to ppm is based on 25°C and 1 atmosphere.

Conversion formula for ppm to mg/m³

$$Y \text{ mg/m}^3 = (X \text{ ppm})(\text{molecular weight}) / 24.45$$