

Appendix A

CMAQ project heavy-duty diesel truck toxic emissions

| Vehicle ID# | Driving Cycle | Engine Type | Model Year | CO | HC | PM | CO ₂ | NO _x | NO ₂ | NO ₂ / NO _x | Carbonyls |
|-------------|---------------|--------------|------------|------|------|------|-----------------|-----------------|-----------------|-----------------------------------|-----------|
| | | | | g/mi | g/mi | g/mi | g/mi | g/mi | g/mi | % | g/mi |
| 1 | 5-Mile | Cummins | 1994 | 1.1 | 0.2 | 0.16 | 1137 | 12.44 | 0.73 | 5.88 | 0.06 |
| | TEST-D | Cummins | 1994 | 1.6 | 0.26 | 0.34 | 1544 | 13.96 | 0.69 | 4.94 | 0.08 |
| 2 | 5-Mile | Navistar | 1992 | 2.6 | 0.83 | 0.38 | 1190 | 9.55 | 0.68 | 7.17 | 0.16 |
| | TEST-D | Navistar | 1992 | 2.4 | 0.93 | 1.07 | 1715 | 10.94 | 0.58 | 5.33 | 0.17 |
| 3 | TEST-D | Mack/Renault | 1994 | 2.4 | 0.41 | 0.59 | 1186 | 12.9 | 0.82 | 6.35 | 0.17 |
| 4 | 5-Mile | Cummins | 1993 | 3.6 | 1.04 | 0.47 | 1321 | 9.36 | 1.20 | 12.86 | 0.23 |
| | TEST-D | Cummins | 1993 | 2.9 | 1.04 | 0.74 | 1817 | 11.3 | 0.97 | 8.63 | 0.27 |
| 5 | 5-Mile | Ford | 1989 | 4.1 | 1.3 | 1.05 | 1864 | 15.65 | 0.73 | 4.64 | 0.27 |
| | TEST-D | Ford | 1989 | 6.4 | 1.35 | 2.4 | 2527 | 18.46 | 0.86 | 4.66 | 0.42 |
| 5 | TEST-D | Ford | 1989 | 5.5 | 1.23 | 1.59 | 2269 | 16.21 | 0.75 | 4.62 | 0.42 |
| | TEST-D | Ford | 1989 | 6.6 | 1.35 | 2.11 | 2855 | 20.62 | 0.77 | 3.72 | 0.38 |
| 6 | 5-Mile | Cummins | 1996 | 4.9 | 2.5 | 0.99 | 1211 | 12.37 | 1.31 | 10.60 | 0.30 |
| | TEST-D | Cummins | 1996 | 6.5 | 3.19 | 1.31 | 1435 | 11.07 | 1.08 | 9.75 | 0.50 |
| 7 | 5-Mile | Cummins | 1994 | 3.9 | 2.01 | 0.91 | 1664 | 19.64 | 1.58 | 8.05 | 0.28 |
| | TEST-D | Cummins | 1994 | 5.2 | 2.64 | 0.99 | 2008 | 16.78 | 1.04 | 6.22 | 0.48 |
| 7 | TEST-D | Cummins | 1994 | 4.3 | 2.93 | 0.99 | 1733 | 13.38 | 1.48 | 11.07 | 0.28 |
| | TEST-D | Cummins | 1994 | 5 | 2.87 | 1.08 | 2163 | 17.06 | 1.30 | 7.63 | 0.42 |
| 8 | 5-Mile | Caterpillar | 1985 | 8 | 1.99 | 1.43 | 1705 | 17.09 | 2.31 | 13.53 | 0.37 |
| | TEST-D | Caterpillar | 1985 | 10.4 | 1.57 | 1.57 | 2263 | 20.56 | 1.36 | 6.61 | 0.18 |
| 9 | 5-Mile | Caterpillar | 1990 | 3.4 | 0.8 | 1.38 | 1236 | 12.47 | 1.34 | 10.76 | 0.07 |
| | TEST-D | Caterpillar | 1990 | 3.2 | 0.8 | 1.63 | 1590 | 13.94 | 1.17 | 8.41 | 0.08 |
| 10 | TEST-D | Navistar | 1993 | 3.5 | 0.38 | 0.97 | 1561 | 11.86 | 0.84 | 7.09 | 0.06 |
| | 5-Mile | Ford | 1990 | 1.8 | 0.65 | 0.59 | 969 | 10.03 | 0.79 | 7.90 | 0.05 |
| 11 | TEST-D | Ford | 1990 | 2.3 | 0.71 | 0.77 | 1162 | 12.55 | 0.78 | 6.21 | 0.06 |
| | 5-Mile | Cummins | 1995 | 2.5 | 0.6 | 0.47 | 1130 | 12.89 | 1.61 | 12.49 | 0.07 |
| 12 | TEST-D | Cummins | 1995 | 2.7 | 0.63 | 0.57 | 1436 | 15.92 | 1.52 | 9.57 | 0.37 |
| | 5-Mile | Cummins | 1998 | 2.2 | 0.56 | 0.37 | 1633 | 14.91 | 2.98 | 19.99 | 0.14 |
| 13 | TEST-D | Cummins | 1998 | 2.1 | 0.56 | 0.44 | 2272 | 23.4 | 2.63 | 11.26 | 0.17 |
| | 5-Mile | Cummins | 1984 | 4.3 | 1.24 | 1.46 | 1966 | 21.06 | 2.57 | 12.23 | 0.27 |
| 14 | TEST-D | Cummins | 1984 | 5.3 | 1.66 | 1.58 | 2182 | 28.23 | 1.93 | 6.83 | 0.38 |
| | 5-Mile | Cummins | 1998 | 2 | 0.47 | 0.48 | 2068 | 25.64 | 2.56 | 10.00 | 0.15 |
| 15 | TEST-D | Cummins | 1998 | 2.7 | 0.65 | 0.61 | 2874 | 37.37 | 2.59 | 6.94 | 0.19 |
| | 5-Mile | GM | 1988 | 4 | 0.8 | 1.34 | 1432 | 13.43 | 1.19 | 8.87 | 0.23 |
| 16 | TEST-D | GM | 1988 | 7.3 | 0.76 | 2.45 | 2025 | 13.71 | 0.85 | 6.18 | 0.23 |
| | 5-Mile | Cummins | 1995 | 2.9 | 0.26 | 0.19 | 1099 | 9.28 | 0.59 | 6.41 | 0.12 |
| 17 | TEST-D | Cummins | 1995 | 2.2 | 0.14 | 0.35 | 1347 | 11.81 | 0.46 | 3.87 | 0.08 |
| | 5-Mile | Navistar | 1996 | 2.2 | 0.32 | 0.52 | 837 | 8.98 | 1.19 | 13.24 | 0.17 |
| 18 | TEST-D | Navistar | 1996 | 1.4 | 0.21 | 0.28 | 939 | 9.85 | 0.74 | 7.51 | 0.12 |
| | 5-Mile | Navistar | 1992 | 2.6 | 0.63 | 0.49 | 1135 | 12.06 | 1.02 | 8.43 | 0.13 |
| 19 | TEST-D | Navistar | | 5 | 0.67 | 0.99 | 1586 | 13.58 | 0.84 | 6.18 | 0.23 |
| | 5-Mile | Renault | 1993 | 5.1 | 0.26 | 0.56 | 1022 | 11.39 | 0.86 | 7.55 | 0.09 |
| 20 | TEST-D | Renault | 1993 | 7.2 | 0.26 | 0.96 | 1321 | 10.69 | 0.72 | 6.74 | 0.14 |
| | 5-Mile | Renault | 1991 | 2.5 | 0.37 | 0.62 | 1422 | 11.49 | 1.37 | 11.94 | 0.18 |
| 21 | TEST-D | Renault | 1991 | 2.4 | 0.31 | 0.68 | 1817 | 13.6 | 1.08 | 7.97 | 0.17 |
| | 5-Mile | Cummins | 1998 | 2.7 | 0.54 | 0.56 | 1340 | 12.93 | 1.31 | 10.15 | 0.26 |

| | | | | | | | | | | | |
|----|--------|----------------|------|------|------|------|------|-------|------|-------|------|
| | TEST-D | Cummins | 1998 | 3.2 | 0.55 | 0.64 | 1729 | 15.02 | 0.88 | 5.88 | 0.28 |
| 23 | 5-Mile | International | 1987 | 2.9 | 0.79 | 1.2 | 1100 | 18.73 | 2.11 | 11.24 | 0.30 |
| | TEST-D | International | 1987 | 3.7 | 0.94 | 1.81 | 1384 | 19.87 | 1.46 | 7.36 | 0.37 |
| 24 | 5-Mile | CAT | 1988 | 2.9 | 0.52 | 0.64 | 1113 | 14.58 | 1.29 | 8.83 | 0.20 |
| | TEST-D | CAT | 1989 | 5.8 | 0.62 | 1.66 | 1627 | 20.21 | 0.96 | 4.75 | 0.19 |
| 25 | 5-Mile | MACK | 1998 | 1.6 | 0.34 | 0.25 | 2164 | 25.37 | 2.13 | 8.38 | 0.17 |
| | TEST-D | Mack | 1998 | 3.6 | 0.36 | 0.43 | 2870 | 37.66 | 2.80 | 7.42 | 0.19 |
| 26 | 5-Mile | Mitsubishi | 1999 | 4.9 | 0.66 | 0.14 | 927 | 6.66 | 0.04 | 0.59 | 0.30 |
| | TEST-D | Mitsubishi | 1999 | 3.5 | 0.41 | 0.36 | 1405 | 7.17 | 0.03 | 0.48 | 0.29 |
| 27 | TEST-D | Cummins | 1995 | 1.8 | 0.5 | 0.72 | 1852 | 15.28 | 0.56 | 3.69 | 0.25 |
| | 5-Mile | Cummins | 1995 | 1.7 | 0.51 | 0.63 | 1204 | 12.18 | 0.59 | 4.83 | 0.19 |
| | TEST-D | Cummins | 1995 | 2.5 | 0.55 | 0.77 | 1760 | 15.67 | 0.68 | 4.33 | 0.23 |
| 28 | 5-Mile | Navistar | 1987 | 5.1 | 0.74 | 1.06 | 1219 | 18.35 | 1.08 | 5.88 | 0.16 |
| | TEST-D | Navistar | 1987 | 14.7 | 0.75 | 2.62 | 1705 | 21.77 | 1.02 | 4.69 | 0.20 |
| 29 | 5-Mile | CAT | 1996 | 2.6 | 0.1 | 0.24 | 1365 | 14.83 | 0.88 | 5.91 | 0.08 |
| | TEST-D | CAT | 1996 | 5.7 | 0.13 | 0.51 | 1993 | 17.07 | 0.99 | 5.80 | 0.07 |
| 30 | 5-Mile | Navistar | 1995 | 1.1 | 0.12 | 0.2 | 1273 | 15.05 | 0.86 | 5.74 | 0.07 |
| | TEST-D | Navistar | 1995 | 1.2 | 0.16 | 0.31 | 1607 | 17.1 | 0.75 | 4.38 | 0.08 |
| 31 | 5-Mile | MACK | 1997 | 8.2 | 0.76 | 0.61 | 881 | 16.78 | 1.34 | 8.01 | 0.20 |
| | TEST-D | MACK | 1997 | 12.7 | 0.69 | 1.02 | 1133 | 22.29 | 1.38 | 6.18 | 0.20 |
| 31 | 5-Mile | MACK | 1997 | 1.4 | 0.18 | 0.28 | 1965 | 18.26 | | | |
| | TEST-D | MACK | 1997 | 1.8 | 0.25 | 0.87 | 2610 | 20.55 | | | |
| 32 | 5-Mile | Ford | 1988 | 2.2 | 0.54 | 0.62 | 1112 | 16.47 | | | |
| | TEST-D | Ford | 1988 | 4.9 | 0.91 | 0.93 | 1588 | 20.52 | | | |
| 33 | 5-Mile | Detroit Diesel | 1995 | 6.4 | 0.15 | 0.68 | 2310 | 17.79 | | | |
| | TEST-D | Detroit Diesel | 1995 | 9.6 | 0.06 | 0.48 | 2387 | 29.84 | | | |