**Section 352.421 Estimation of Projected Effluent Quality**

a) The first step in determining if a reasonable potential to exceed the water quality standard exists for any particular pollutant parameter is the estimation of the maximum expected effluent concentration for that substance. That estimation will be completed for both acute and chronic exposure periods and is termed the PEQ. The PEQ shall be derived from representative facility specific data to reflect a 95 percent confidence level for the 95th percentile value. These data will be presumed to adhere to a lognormal distribution pattern unless the actual effluent data demonstrates a different distribution pattern. If facility specific data in excess of 10 data values is available, a coefficient of variation that is the ratio of the standard deviation to the arithmetic average shall be calculated by the Agency. The PEQ is derived as the upper bound of a 95 percent confidence bracket around the 95th percentile value through a multiplier from the following table applied to the maximum value in the data set that has its quality assured consistent with Section 352.410 as appropriate for acute and chronic data sets.

PEQ = (maximum data point)(statistical multiplier)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Coefficient of Variation | | | | | | |
| No. Samples | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 |
|  |  |  |  |  |  |  |  |
| 1 | 1.4 | 1.9 | 2.6 | 3.6 | 4.7 | 6.2 | 8.0 |
| 2 | 1.3 | 1.6 | 2.0 | 2.5 | 3.1 | 3.8 | 4.6 |
| 3 | 1.2 | 1.5 | 1.8 | 2.1 | 2.5 | 3.0 | 3.5 |
| 4 | 1.2 | 1.4 | 1.7 | 1.9 | 2.2 | 2.6 | 2.9 |
| 5 | 1.2 | 1.4 | 1.6 | 1.8 | 2.1 | 2.3 | 2.6 |
| 6 | 1.1 | 1.3 | 1.5 | 1.7 | 1.9 | 2.1 | 2.4 |
| 7 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 2.0 | 2.2 |
| 8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.7 | 1.9 | 2.1 |
| 9 | 1.1 | 1.2 | 1.4 | 1.5 | 1.7 | 1.8 | 2.0 |
| 10 | 1.1 | 1.2 | 1.3 | 1.5 | 1.6 | 1.7 | 1.9 |
| 11 | 1.1 | 1.2 | 1.3 | 1.4 | 1.6 | 1.7 | 1.8 |
| 12 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 |
| 13 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 |
| 14 | 1.1 | 1.2 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 |
| 15 | 1.1 | 1.2 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 |
| 16 | 1.1 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 |
| 17 | 1.1 | 1.1 | 1.2 | 1.3 | 1.4 | 1.4 | 1.5 |
| 18 | 1.1 | 1.1 | 1.2 | 1.3 | 1.3 | 1.4 | 1.5 |
| 19 | 1.1 | 1.1 | 1.2 | 1.3 | 1.3 | 1.4 | 1.5 |
| 20 | 1.1 | 1.1 | 1.2 | 1.2 | 1.3 | 1.4 | 1.4 |
| 30 | 1.0 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 |
| 40 | 1.0 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 50 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 60 or greater | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
|  |  |  |  |  |  |  |  |
|  | Coefficient of Variation | | | | | | |
|  | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 |  |
|  |  |  |  |  |  |  |  |
|  | 10.1 | 12.6 | 15.5 | 18.7 | 22.3 | 26.4 |  |
|  | 5.4 | 6.4 | 7.4 | 8.5 | 9.7 | 10.9 |  |
|  | 4.0 | 4.6 | 5.2 | 5.8 | 6.5 | 7.2 |  |
|  | 3.3 | 3.7 | 4.2 | 4.6 | 5.0 | 5.5 |  |
|  | 2.9 | 3.2 | 3.6 | 3.9 | 4.2 | 4.5 |  |
|  | 2.6 | 2.9 | 3.1 | 3.4 | 3.7 | 3.9 |  |
|  | 2.4 | 2.6 | 2.8 | 3.1 | 3.3 | 3.5 |  |
|  | 2.3 | 2.4 | 2.6 | 2.8 | 3.0 | 3.2 |  |
|  | 2.1 | 2.3 | 2.4 | 2.6 | 2.8 | 2.9 |  |
|  | 2.0 | 2.2 | 2.3 | 2.4 | 2.6 | 2.7 |  |
|  | 1.9 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 |  |
|  | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 |  |
|  | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 |  |
|  | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 |  |
|  | 1.7 | 1.8 | 1.8 | 1.9 | 2.0 | 2.1 |  |
|  | 1.6 | 1.7 | 1.8 | 1.9 | 1.9 | 2.0 |  |
|  | 1.6 | 1.7 | 1.7 | 1.8 | 1.9 | 1.9 |  |
|  | 1.6 | 1.6 | 1.7 | 1.7 | 1.8 | 1.9 |  |
|  | 1.5 | 1.6 | 1.6 | 1.7 | 1.8 | 1.8 |  |
|  | 1.5 | 1.5 | 1.6 | 1.6 | 1.7 | 1.7 |  |
|  | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 |  |
|  | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |  |
|  | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |  |
|  | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |

1) If the PEQ is less than or equal to the water quality standard, there is no reasonable potential and no limit will be established in the permit.

2) If the PEQ is more than the water quality standard, the Agency will proceed to consideration of dilution and mixing pursuant to Section 352.422.

b) If facility-specific data of 10 or less data values is available, an alternative PEQ shall be derived using the table in Section 352.421(a), assuming a coefficient of variation of 0.6, applied to the maximum value in the data set that has its quality assured consistent with Section 352.410.

1) If the PEQ is less than or equal to the water quality standard, there is no reasonable potential and no limit will be established in the permit.

2) If the PEQ exceeds the water quality standard, an alternative PEQ will be calculated using the maximum value in the data set and a multiplier of 1.4. If the alternative PEQ also exceeds the PEL, the Agency will proceed to consider dilution and mixing pursuant to Section 352.422.

3) If the PEQ exceeds the water quality standard but the alternative PEQ is less than or equal to the standard, the Agency will either proceed to consider dilution and mixing pursuant to Section 352.422, or will incorporate a monitoring requirement and reopener clause to reassess the potential to exceed within a specified time schedule, not to exceed one year. In determining which of these options to use in any individual application, the Agency shall consider the operational and economic impacts on the permittee and the effect, if any, deferral of a final decision would have on an ultimate compliance schedule if a permit limit were subsequently determined to be necessary.

c) The Agency shall compare monthly average effluent data values, when available, with chronic aquatic life, human health and wildlife standards to evaluate the need for monthly average WQBELs. The Agency shall use daily effluent data values to determine whether a potential exists to exceed acute aquatic life water quality standards.

d) The Agency may apply other scientifically defensible statistical methods for calculating PEQ at the 95th percentile value for use in the reasonable potential analysis as provided for in Procedure 5.b.2 of Appendix F to 40 CFR 132.

e) Regardless of the statistical procedure used, if the PEQ for the parameter is less than or equal to the water quality standard for that parameter, the Agency shall deem the discharge not to have a reasonable potential to exceed, and a water quality based effluent limit (WQBEL) shall not be required unless otherwise required under Section 352.430.