TLV of Mixtures*

$$\frac{C_1}{T_1} + \frac{C_2}{T_2} + \ldots \frac{C_n}{T_n}$$

C = Concentration of Chemical [ppm or mg/m^3]

C_1 = Concentration #1 [ppm or mg/m^3]

T_1 = TLV #1 [ppm or mg/m^3]

When a worker is exposed to more than one chemical and each chemical effects the same target organ [i.e., central nervous system] then the sum of their ratios must be less than one [1] or the combined exposures are considered to be exceeding the TLV of the mixture.

It is a serious mistake to compare each chemical in a mixture independently to their respective TLVs. To do so dramatically underestimates the actual risk to the exposed workers.

Example [ppm]:

- C_1=14, T_1=25; C_2=1.8, T_2=5; C_3=1, T_3=10
  TLV=14/25 + 1.8/5 + 3/10
  TLV=1.22; TLV of mixture is exceeded.

- C_1=5, T_1=25; C_2=3, T_2=5; C_3=1, T_3=10
  TLV=5/25 + 3/5 + 1/10
  TLV=0.9; TLV of mixture is not exceeded.

*ACGIH®, TLVs, https://www.acgih.org/