# Wyoming Approach to Adjusting FIRE Factor Table for use in IMPACT

11-20-19

**Notes**:

- Some of the modifications listed below might be applicable only to IMPACT due to specific behavior, constraints or logic of this software.
- IMPACT uses only **uncontrolled** FIRE emission factors for point sources (9-digit SCCs).
- IMPACT biases toward fuel consumption with **heat <u>content</u>** as a variable, rather than **heat <u>input</u>**.

## Reformatting and editing records in the FIRE table:

- Limit it to only <u>uncontrolled</u> factors for 9 digit SCCs.
- If there is a *less-than* inequality for an emission factor, use half of the value the factor is less than.
- If the emission factor is given as a *range*, then evaluate the average of the range to use as the factor: e.g., in FIRE table ID = 53957, the factor range = 4.400E-5 - 7.000E-5.
- Remove line feed Chr(10) character in the formulas.
- Change (% Ash Content), (A) to **A** in the formulas.
- Change (% Sulfur Content) to **S** in the formulas.
- Truncate the formula when a comma ',' or the word "where" appears. I.e., remove explanatory text from the formula:
  e.g. ID = 79706; formula = "1.75(S)+0.61, where S is the wt. % of the sulfur in the oil."
- Scale the factors and formulas to change the measure code from E3Ton to Ton.
- Change material input from Heat, Fuel, E6BTU or work to the appropriate fuel consumption based on SCC (e.g., E3Gal Distillate Oil, E6FT3 Natural Gas, Ton Bituminous /Subbituminous Coal) and the heat content of the solid, liquid or gas.
  - This also replaces HP-HR variations.
  - This changes some of the factors into formulas.
- Create unique variables to adjust for when EPA allows a single variable to have multiple meanings; for example 's' is used for sulfur content, silt content and spike bakers percent of yeast. Similarly, 'A' is used for ash content and horizontal area.
- Correct the units of emissions to pounds, and correct measure of material to be Tons and E3Gal rather than MG, KG, L and KL.
- Based on specific SCCs, correct the **measure_cd** to a more appropriate throughput, such as **E3Gal** of gasoline transferred rather than Tons.

- Where we have already established a precedent of mapping factors from one SCC to another, we will map those same factors.
- Map materials based on SCC to more consistent materials such as Distillate Oil (No. 1 & 2) to just **Distillate Oil**.
- Verify that the duplicate material mapping did not widow any SCCs.
- Generate Null factors for IMPACT since we need at least one active factor for each SCC that we report against. When there are SCCs without factors, we need to generate a row with a null factor and formula.
- Exclude factors that have been revoked or deemed not usable and format the factors for input.
- Check if any of the SCCs have multiple Material Actions or Measures to verify that we are okay with those SCCs having multiples.

**********

**Comments**:
IMPACT does not auto-populate any default values for variables (e.g., ash content, sulfur content,…).