

Directions for Using Foundry.xls to Track Registration Permit Option D Compliance

There are four worksheets in the Excel file named Foundry.xls. These worksheets are designed for calculating actual air emissions. Minnesota foundries with a Registration Permit – Option D can use them to meet the recording keeping and reporting requirements of their permit. The first worksheet, *Monthly Criteria*, calculates monthly emissions for criteria pollutants, the second, *Monthly HAP*, calculates monthly emissions for hazardous air pollutants (HAP), the third, *Rolling Criteria*, calculates a 12-month rolling sum for criteria pollutants, and the fourth, *Rolling HAP*, calculates a 12-month rolling sum for HAP.

Step 1

In the first worksheet, *Monthly Criteria*, enter the date (month and year) at the top of the worksheet.

Step 2

Go to the Particulate Matter (PM) and (Particulate Matter less than 10 microns) PM₁₀ Emissions table. Enter in the blue boxes the value for throughput and control efficiency as appropriate for each of the metal casting processes you perform. PM and PM₁₀ emissions will then be calculated automatically.

Step 3

Go to the Nitrogen Oxides (NO_x), Sulfur Dioxide (SO₂), and Carbon Monoxide (CO) emissions table. Enter in the blue boxes the amount of propane and binders used. NO_x, SO₂, and CO emissions will then be calculated automatically. You do not need to worry about forklifts. Emissions from forklifts qualify as insignificant activities according to MN air quality rules.

Step 4

Go to the Volatile Organic Compound (VOC) emissions table. For catalysts and resins, you will need to enter the VOC percent by weight and the density. These can be obtained from Material Safety Data Sheets or from your supplier. Enter in the blue boxes the amount for propane, binder, catalyst, and resin.

Step 5

Once the total monthly criteria emissions are determined by the first worksheet, *Monthly Criteria*, enter them into the third worksheet, *Rolling Criteria*. This spreadsheet will automatically calculate the 12-month rolling sum. To remain eligible for a Registration Permit Option D, the 12-month rolling sums must remain below 50 ton for PM, PM₁₀, SO₂, NO_x, CO, and VOC.

Step 6

Go to the second worksheet, *Monthly HAP*. Go to the Lead, Chrome (Cr), and Nickel (Ni) Emissions table. Enter in the blue box the tons per month of gray iron produced.

Lead emissions will be calculated automatically. Check the note about the content of Ni and Cr in the iron. Call SBAP if your iron contains percentages of Cr or Ni different from those described and you need help calculating new Cr or Ni emission factors. Once you are confident the emission factors correctly reflect the iron you pour, enter in the appropriate blue boxes the tons of Ni-Hard iron poured or Hi-Chrome iron poured. Ni and Cr emissions will be calculated automatically.

Step 7

Go to the HAP Emissions from Binders table. If you use a binder other than Green Sand or Core Oil call SBAP to obtain appropriate emission factors. If you like, SBAP can send you a copy of the article *Calculating Emission Factors for Pouring, Cooling, and Shakeout*, by Gary Mosher, in the October 1994 issue of *Modern Casting* which is the source of this information. Once you are confident the emission factors reflect the binders you use, enter in the blue boxes the pounds of index used per month. HAP emissions will be calculated automatically.

Step 8

Once the total HAP emissions are determined by the second worksheet, *Monthly HAP*, enter them in the fourth worksheet, *Rolling HAP*. This spreadsheet will automatically calculate the 12-month rolling sum. To remain eligible for a Registration Permit Option D, the 12-month rolling sums must remain below 5 ton for a single HAP, 12.5 ton for combined HAPs, and 0.5 ton for Lead. Lead is both a criteria pollutant and HAP. As a criteria pollutant, Lead emissions must remain below 0.5 ton for a 12 month period in order to stay within the limits of the Registration Permit - Option D.