Training to Build Excel Collaborators

jbe

Problem/Challenge:

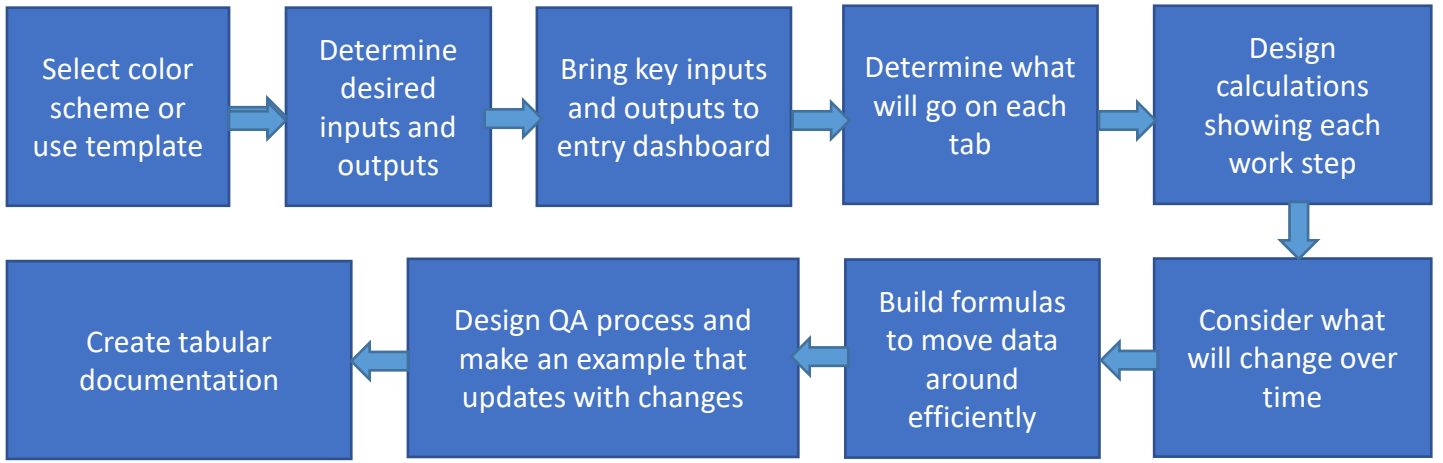
- *Microsoft Excel* tools have become common place in managing many of our everyday data analysis, tabulation and organization efforts. In our years of creating robust tools for our clients, we have identified the following challenges that become a source of consternation for many of our clients:
  - Data validation and QA
  - Difficulty managing advanced formulas
  - Splitting data across multiple workbooks

Solution:

- After several on-site training classes for clients, we held a public session at the 4-C Environmental Workshop in February 2020
- The training process started with just a toolbox we created for our internal use
- Then we added a design section to address what we think about when we build

Benefits:

- Better organized workbooks save organizational time by reducing the effort for review and QA
- Rigorous formula use will decrease the chances things will break as changes are made over time
- Time spent on design helps make sure that the designer won't paint into a corner that later forces the workbook to be scrapped



Loading Rack	Loading Material	Monthly Loading Throughput[2] (gallons/month)	Loading Temperature[3] (°F)	Liquid True Vapor Pressure[4] (psia)	Vapor Molecular Weight[5] (lb/lb-mole)
Truck	Gasoline (Regular)	*100,000*	*52*	*4.6828*	60.00
	Gasoline (Premium)	*50,000*	*59*	*3.4681*	65.00
	Gasoline (Total)	150,000			
	Total	300,000			
Rail Car	#2 Distillate	400,000	*63*	0.0073	150.00
	Naphtha	215,300	*64*	6.3742	65.00
	Asphalt	-	*351*	0.0356	375.00

- Letters are the same font
- Colors blend well
- Contrast will make data printable and avoid wash-out if projected
- Units displayed in a row, and every column with data has them
- Figures have same significant figures and are right justified

Reliable Unit Conversion Tool

jbe

Problem/Challenge:

- Calculations that require unit conversions are often embedded in complex formulas and therefore difficult to check
- More often than acceptable, the inverse of the proper conversion is accidentally applied

Solution:

- EPA's AP-42 started the process with a good format for factors
- JBE has converted this into an interactive tool that can select and deliver to a worksheet
- The EPA factor list did not contain all instances where there was a "from A to B," and also a "from B to A," so we added them to the table using reciprocals – now the list is much more useful
- By using the tool, the choice of the right factor is displayed in a standard way

Benefits:

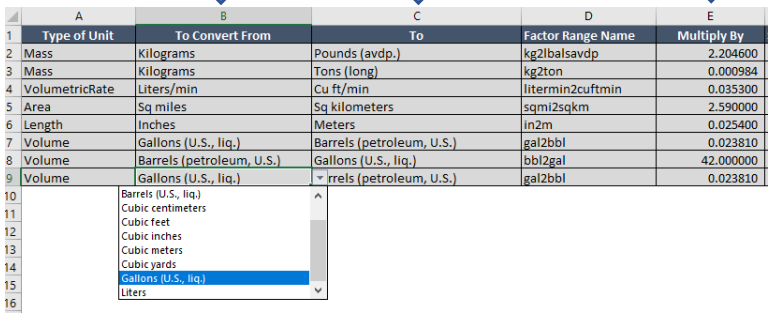
- Only having the factor appear in one place will reduce error potential
- Following this work practice will reduce QA time by reviewers
- Reducing errors in calculations will have a significant impact

- Conversion Factor Table

- Addition of unit conversion converses
- Interactive dropdowns to select needed factors

- Needed factors copy/pasted into the work product at the bottom
- Range names can be used in cell formulas

Critical wording: To convert from ___ to ___ multiply by ___



	A	B	C	D	E
1	Type of Unit	To Convert From	To	Factor Range Name	Multiply By
2	Mass	Kilograms	Pounds (avdp.)	kg2lbalsavdp	2.204600
3	Mass	Kilograms	Tons (long)	kg2ton	0.000984
4	VolumetricRate	Liters/min	Cu ft/min	litermin2cuftmin	0.035300
5	Area	Sq miles	Sq kilometers	sqmi2sqkm	2.590000
6	Length	Inches	Meters	in2m	0.025400
7	Volume	Gallons (U.S., liq.)	Barrels (petroleum, U.S.)	gal2bbl	0.023810
8	Volume	Barrels (petroleum, U.S.)	Gallons (U.S., liq.)	bbl2gal	42.000000
9	Volume	Gallons (U.S., liq.)	rrels (petroleum, U.S.)	gal2bbl	0.023810

Barrels (U.S., liq.)
Cubic centimeters
Cubic feet
Cubic inches
Cubic meters
Cubic yards
Gallons (U.S., liq.)
Liters

In the JBE tool, cascading interactive dropdowns are used to select just the factors you need for your worksheet

=A7*gal2bbl

Use the range name everywhere you need it

=A7*$D$42

Or, just point to the one cell where the factor you need "lives" on the worksheet

Chemical Mixture Flash Tool

jbe

Problem/Challenge:

- Estimating vapor pressure and vapor speciation from lab test data for a petroleum or chemical mixture is a complicated calculation
- Liquid vapor pressure may not be available for “what if” mixtures

Solution:

- EPA’s AP-42 Table 7.1-3 provides all the ingredients needed to produce the results needed
- By standardizing the constituent list differing lab results can be accommodated more efficiently
- Surrogate alkane compounds are used to “fill out” the composition so flash results are truly representative (this follows EPA ICR methodology)

Benefits:

- Tool output can be utilized in storage tank emissions calculations effectively because it produces vapor pressure results from -30 F to 300 F in a single pass
- All streams needed for a refinery can be “processed” at once to reduce labor required significantly when changes happen
- Tool can be used for lots of “what if” calculations that can be produced “side-by-side”
- Data in the tool is all from publicly available sources so making it ideal for studies

- Antoine Equation constants
- Petrochemical physical properties

- All petrochemicals listed in AP-42 are available as input choices – these cover likely refinery TRI and Tier II listed chemicals and MACT CC HAPs
- Typical refinery streams are all available with public speciation

	A	C	D	F	S	T	X	Y
1					N-BUTANE	ISOBUTANE	N-PENTANE	ISOPENTANE
2				Formula	C4H10	C4H10	C5H12	C5H12
3				CAS #	00106-97-8	00075-28-5	00109-66-0	00078-78-4
16	Str #	Stream Name	Tab For Flash	MW (lb/lb-mol)	58.12	58.12	72.15	72.15
17				Values in Wt %				
18	1	National Average	A		0.85	-	0.65	-
19	2	Bakken	B		3.07	0.82	3.15	2.11
20	3	West Texas Intermediate	C		0.65	-	2.00	-
21	4	North Slope - Exxon	D		1.53	0.31	1.70	0.99
22	5	Arab Light	E		0.93	0.19	1.37	0.79
23	6	Cold Lake	F		0.91	-	4.46	-

- 54 petrochemicals listed in AP-42 are available as speciation
- Users can modify existing data or provide their own
- Common refinery streams are speciated based on public data

	A	B	C	D	L	M	N
1	Tank Product	Tab Name	Liquid Density (lb/gal)	Vapor Molecular Weight (g/mol)	40	50	60
2					F	F	F
4	National Average	A	6.461	51.053	1.4435	1.7376	2.0770
5	Bakken	B	6.080	49.472	6.9182	8.2792	9.8399
6	West Texas Intermediate	C	6.454	57.435	1.0105	1.2424	1.5155
7	North Slope - Exxon	D	6.452	55.244	2.6045	3.1636	3.8136
8	Arab Light	E	6.440	52.955	2.1448	2.5966	3.1211
9	Cold Lake	F	6.389	61.595	1.5616	1.9419	2.3942
10	Louisiana Light Sweet	G	6.441	49.667	6.1601	7.3548	8.7191
11	West Texas Sour	H	6.442	52.917	2.1867	2.6461	3.1792

Data Substitution Tool

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Problem/Challenge:

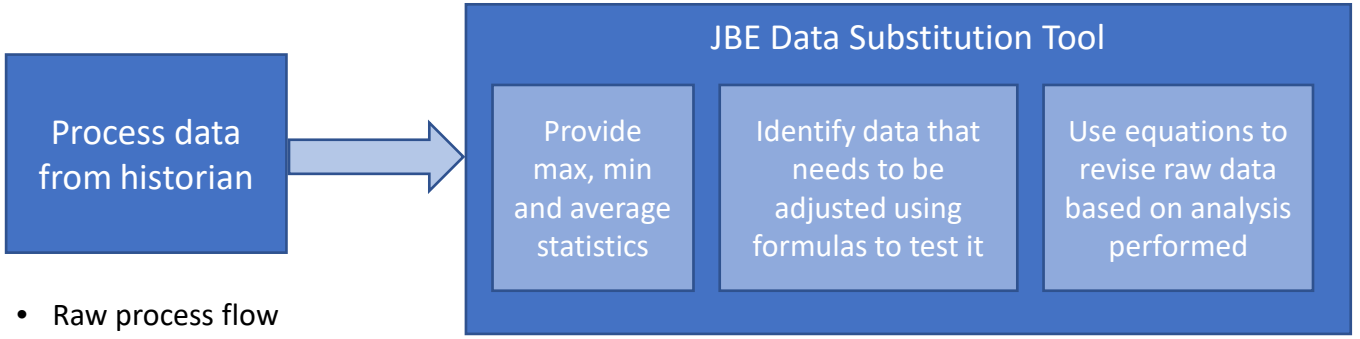
- Often process data contains gaps or instances where the meter is malfunctioning or displays erratic data at low rates of flow or values above its span
- Selecting daily, monthly or annual data from the data historian will cause this data to skew calculated results significantly

Solution:

- The process of adjusting data must be well-documented and performed in such a way that accidentally using the adjusted results for a template will not occur
- JBE has developed a set of formulas and a well-thought-out layout to display results clearly

Benefits:

- Quantifying instances where erroneous subtraction is occurring and eliminating them is key to compliance
- Filling in data where total emissions limits are in place is key to avoiding under-reporting performance
- This approach is ideal for supporting adjustments in the face of audits
- Failure to report exceedances properly is key to avoiding enforcement and potential penalties



- Raw process flow rates
- Associated dates and times

Monthly Fuel Gas Usage Summary		Data Substitution Legend	
Source: Example Heater			A value has been hard entered in a location that overrides automated calculations.
EU ID: ---			Manual data entry required.
PI Tag: EXAMPLE			No PI Data was available and the last good value is being used in its place.
PI Tag Description: Fuel Gas-Fired Heater Fuel Flow (MSCFH)			Negative value that has been replaced with the last good value.
Instrument Span Value: 1000			Instrument span was exceeded and instrument span value is being used in its place.
			Instrument was down and the last good value is being used in its place.
			Unit was down and a value of zero (0) is being used in its place.

Date	Average Daily Fuel Gas Usage	Unit Down	Instrument Down	No PI Data	Negative Value	Instrument Span Exceedance	Average Daily Fuel Gas Usage - Data Substitution
		Percentages					
	MSCFH	16.67%	5.56%	11.11%	5.56%	11.11%	MSCFH
Maximum Value	1084.00						1000.00
Minimum Value	-5.00						0.00
Average Value	450.50						483.72
1/1/2017	566.00						566.00
1/2/2017	PI DATA RETRIEVAL ERROR			x			566.00
1/3/2017	921.00						921.00
1/4/2017				x			132.00
1/5/2017	845.00						845.00
1/6/2017	1048.00					x	1000.00
1/7/2017	510.00						510.00

- Showing the “before” and “after” is critical
- Showing why the change was made in an easy-to-read fashion speeds QA

Fenceline Data Analysis Tool

jbe

Problem/Challenge:

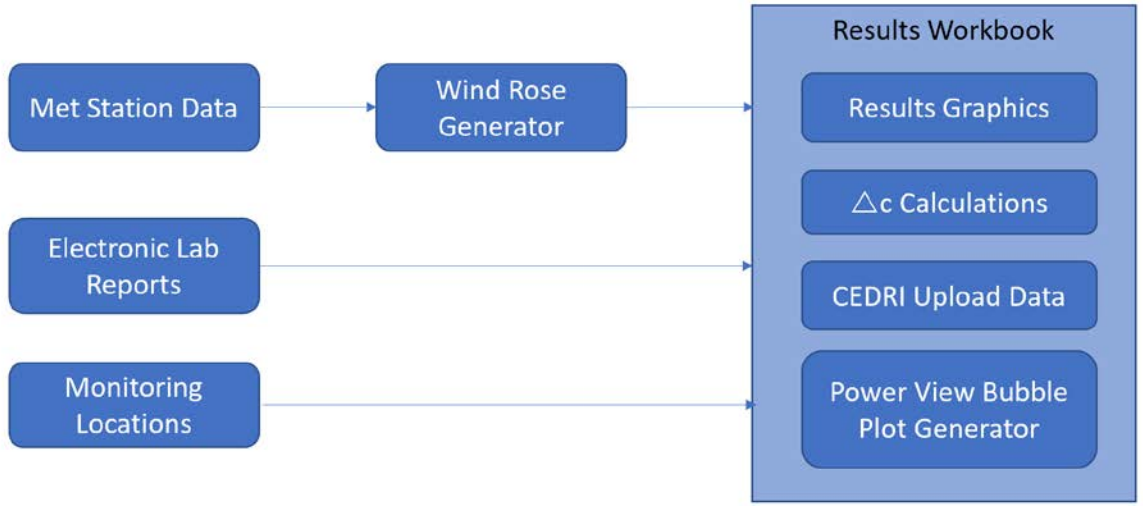
- Analysis of benzene fenceline monitoring data is not effective if each monitoring event is not considered along with wind rose data
- EPA's on-line tools do not provide any met data perspective (EPA does not even collect this data)

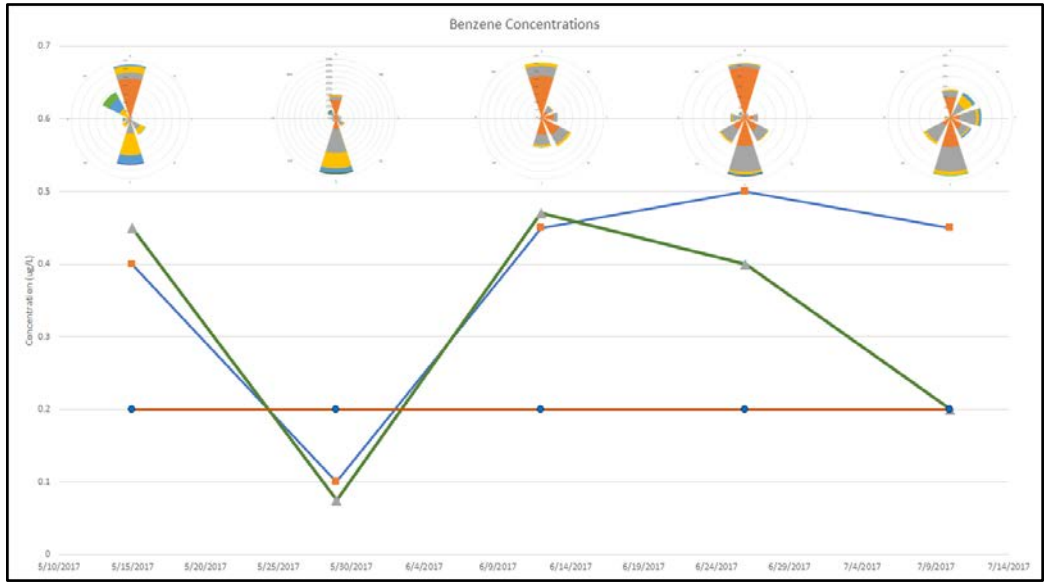
Solution:

- JBE develop a unique approach to generating the wind roses and importing them into a trend line, all within Excel
- Doing thee calculations in Excel allows the user to perform additional analysis without the complication of a data export step from a custom third-party software tool

Benefits:

- Using JBE's approach, lab data and met data can be converted into an integrated output, avoiding high third-party tool license fees
- JBE Excel data has been wired to the EPA CEDRI upload format to minimize labor in submitting periodic reports





- Showing the "before" and "after" is critical
- Showing why the change was made in a easy-to-read fashion speeds QA

Flowsheet Simulation Tool

jbe

Problem/Challenge:

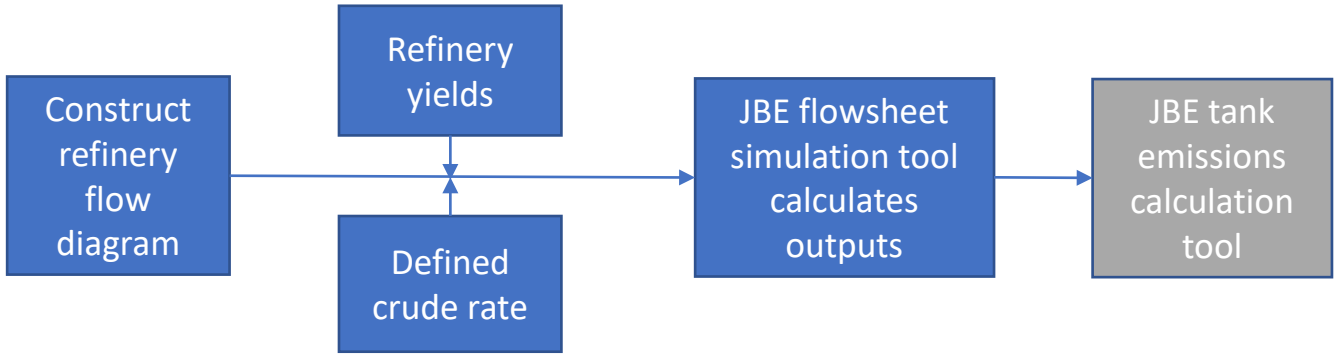
- Refineries struggle to analyze the potential emissions impacts from changes in their process due to alternative feedstocks, crude supply changes or operational strategies
- Where a critical shortage in available process engineering support to run simulations exists, an alternative is essential

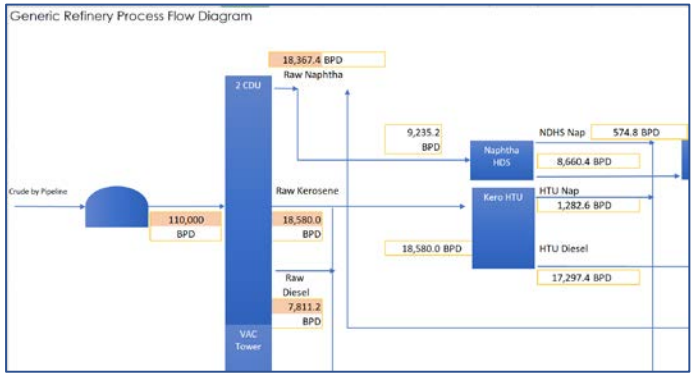
Solution:

- JBE has created an Excel-based flowsheet model that can be used to estimate production results and hence emissions from changes in tank throughputs for various products.
- Actual refinery data can be used if available
- University of Calgary *Prelim* flowsheet model can be used to estimate yields once a crude slate is specified if refinery-specific yield data is not available

Benefits:

- Effective modeling can provide rapid turn-around on “what-if questions” seeking to determining if emissions would increase enough to require a permit revision
- This approach avoids the labor cost associated with process simulation using models like Chemcad, ProMax or HYSIS.





Case Study Evaluation Table						
	Case3	<-- Select Case #	Case1		Case2	
	User Input (MBPD)		User Input (MBPD)	2018 Actual	User Input (MBPD)	Higher Rate
Crude Rate	110,000		98,000		105,000	
	User Input (fract)	Calc (Vol) (MBPD)	User Input (fract)	Calc (Vol) (MBPD)	User Input (fract)	Calc (Vol) (MBPD)
User-Defined Inputs						
Crude Unit Yields	1.000					
Raw Naphtha	0.167	18,367	0.167	16,364	0.167	17,532
Raw Kerosene	0.169	18,580	0.169	16,553	0.169	17,735
Raw Diesel	0.071	7,811	0.071	6,959	0.071	7,456
LVGO	0.094	10,358	0.094	9,228	0.094	9,887
HVGO	0.143	15,754	0.143	14,036	0.143	15,038
Reduced Crude	0.356	39,129	0.356	34,860	0.356	37,351
Calculated Outputs						
Product for Sales	96,041	0.980	83,402	0.851	89,359	0.912
Propane	9	0.000	8	0.000	9	0.000
Butanes	372	0.004	241	0.002	258	0.003
Gasoline	16,513	0.168	12,640	0.129	13,543	0.138
Jet/Kero	17,297	0.177	15,410	0.157	16,511	0.168
Diesel	22,720	0.232	20,242	0.207	21,688	0.221
Reduced Crude	39,129	0.399	34,860	0.356	37,351	0.381

Release Reporting Tool

jbe

Problem/Challenge:

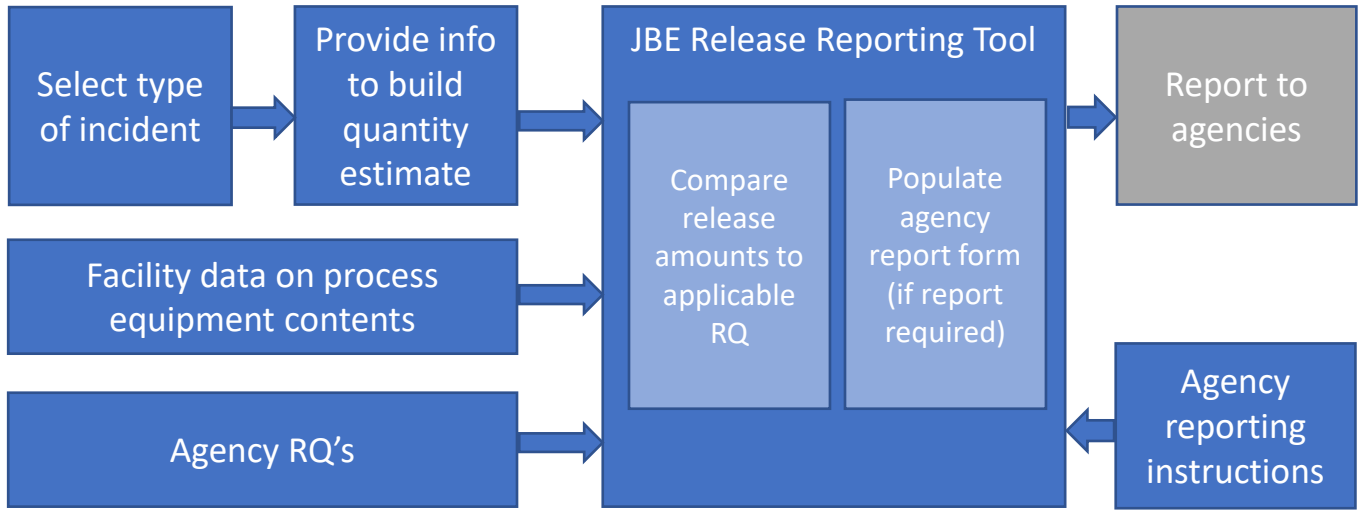
- In the rush to respond to an emergency, making a timely report is challenging given competing priorities
- There is never enough time to locate process data required to apply RQ's

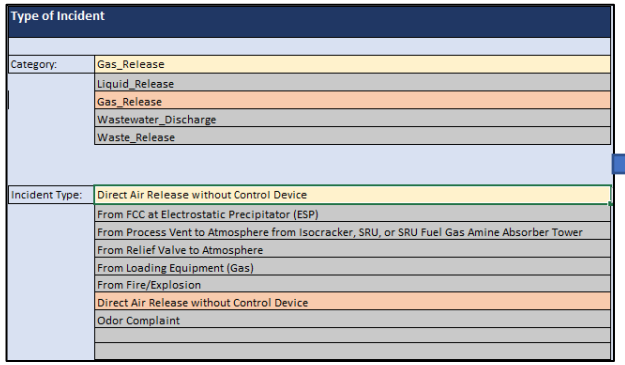
Solution:

- JBE's prompt reporting tool is designed to gather up required process information so it is available in an emergency
- Applying RQ's can be complicated, especially if the staff member is not familiar with all environmental media
- The release quantity estimate is applied to the situation based on the stored data, avoiding the need to locate data under pressure

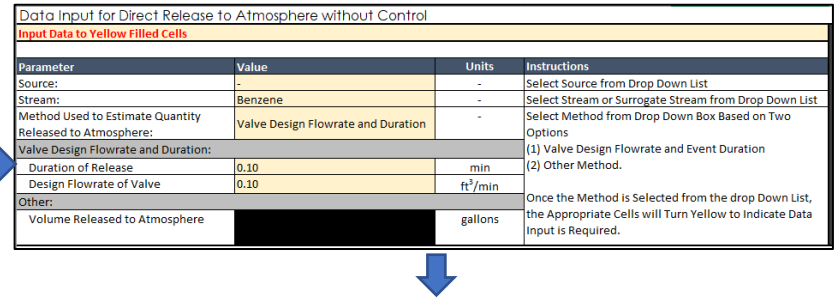
Benefits:

- Making timely and accurate release reports is key to avoiding enforcement and fines





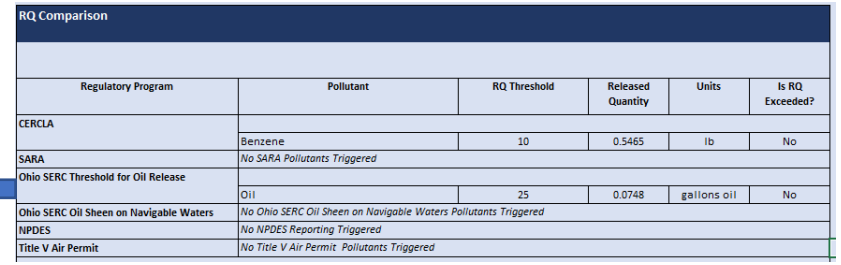
Type of Incident	
Category:	Gas_Release
	Liquid_Release
	Gas_Release
	Wastewater_Discharge
	Waste_Release
Incident Type:	Direct Air Release without Control Device
	From FCC at Electrostatic Precipitator (ESP)
	From Process Vent to Atmosphere from Isocracker, SRU, or SRU Fuel Gas Amine Absorber Tower
	From Relief Valve to Atmosphere
	From Loading Equipment (Gas)
	From Fire/Explosion
	Direct Air Release without Control Device
	Odor Complaint



Data Input for Direct Release to Atmosphere without Control

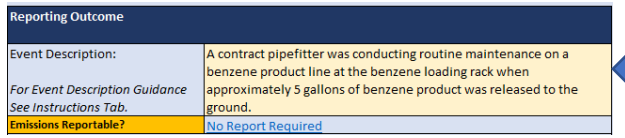
Input Data to Yellow Filled Cells

Parameter	Value	Units	Instructions
Source:	-	-	Select Source from Drop Down List
Stream:	Benzene	-	Select Stream or Surrogate Stream from Drop Down List
Method Used to Estimate Quantity Released to Atmosphere:	Valve Design Flowrate and Duration	-	Select Method from Drop Down Box Based on Two Options (1) Valve Design Flowrate and Event Duration (2) Other Method.
Valve Design Flowrate and Duration:			
Duration of Release	0.10	min	
Design Flowrate of Valve	0.10	ft^3/min	
Other:			
Volume Released to Atmosphere		gallons	Once the Method is Selected from the drop Down List, the Appropriate Cells will Turn Yellow to Indicate Data Input is Required.



RQ Comparison

Regulatory Program	Pollutant	RQ Threshold	Released Quantity	Units	Is RQ Exceeded?
CERCLA					
	Benzene	10	0.5465	lb	No
SARA	*No SARA Pollutants Triggered*				
Ohio SERC Threshold for Oil Release					
	Oil	25	0.0748	gallons oil	No
Ohio SERC Oil Sheen on Navigable Waters	*No Ohio SERC Oil Sheen on Navigable Waters Pollutants Triggered*				
NPDES	*No NPDES Reporting Triggered*				
Title V Air Permit	*No Title V Air Permit Pollutants Triggered*				



Reporting Outcome	
Event Description: *For Event Description Guidance See Instructions Tab.*	A contract pipefitter was conducting routine maintenance on a benzene product line at the benzene loading rack when approximately 5 gallons of benzene product was released to the ground.
Emissions Reportable?	No Report Required

Multiple Plan Generation Tool

jbe

Problem/Challenge:

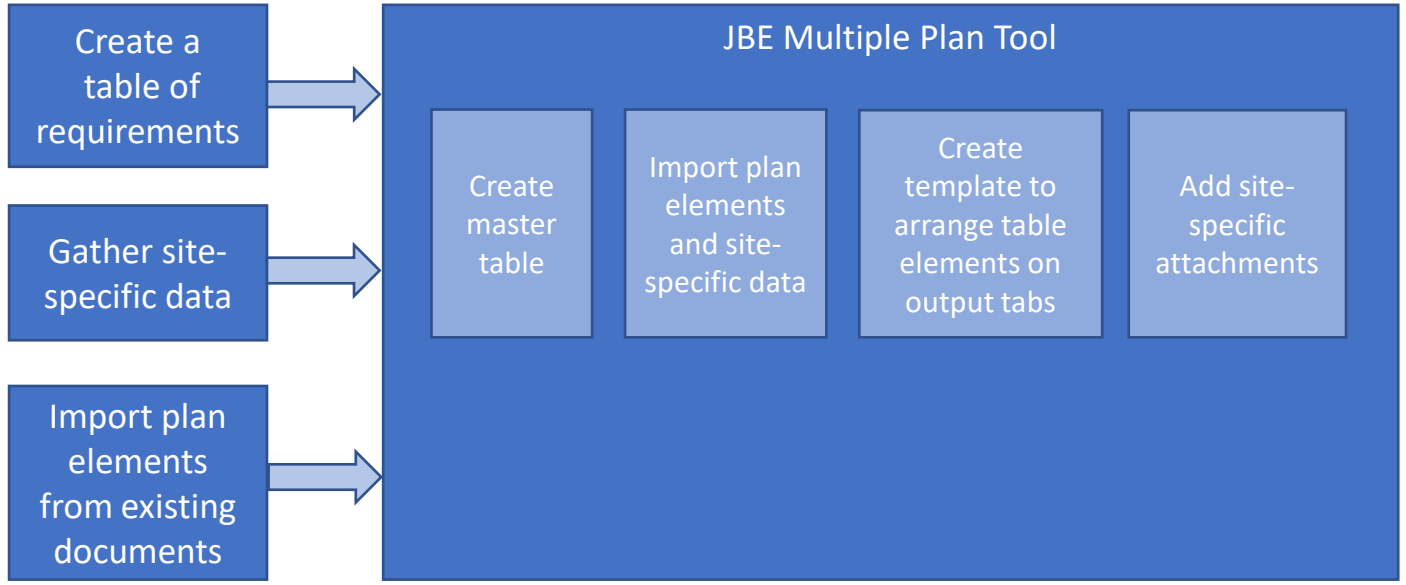
- Updating multiple plans as sites changes can be labor-intensive and prone to transcription errors
- Comparing elements for multiple plans or reports that are similar, but have certain site-specific aspects is time-consuming

Solution:

- By using a table showing all of the driving requirements, the plan can be organized to follow the flow of the regulation (actually required for an SPCC)
- The use of tables to generate multiple versions of the plan in separate tabs (using formulas) eliminates the need to make changes to each plan individually as updates occur.

Benefits:

- Organizing the master template to include the requirement text helps reviewers make sure that the requirements are properly addressed by the plan.
- The table also helps ensure that all of the plans approach requirements in the right way and that all site-specific data is matched to the right site



ACME Company					
Requirement	Requirement Text	Default Plan Contents	Site A Plan	Site B Plan	Site C Plan
40 CFR 112.8(d)(4)	You must also conduct integrity and leak testing of buried piping at the time of installation, modification, construction, relocation, or replacement.	At present there are no buried oil pipelines on site.	At present there are no buried oil pipelines on site.	All newly-installed or replaced buried oil transfer piping will be provided with a protective wrapping and coating and will comply with federal and state cathodic protection requirements.	At present there are no buried oil pipelines on site.

SPCC Plan - Site C		
Requirement	Plan Section	Plan Element
40 CFR 112.8(d)(4)	Spill Prevention - Buried Piping	At present there are no buried oil pipelines on

- Having a master table speeds the generation process
- Excel tables can be formatted to simulate the look of a Word Document

Chemical Inventory Reporting Tool

jbe

Problem/Challenge:

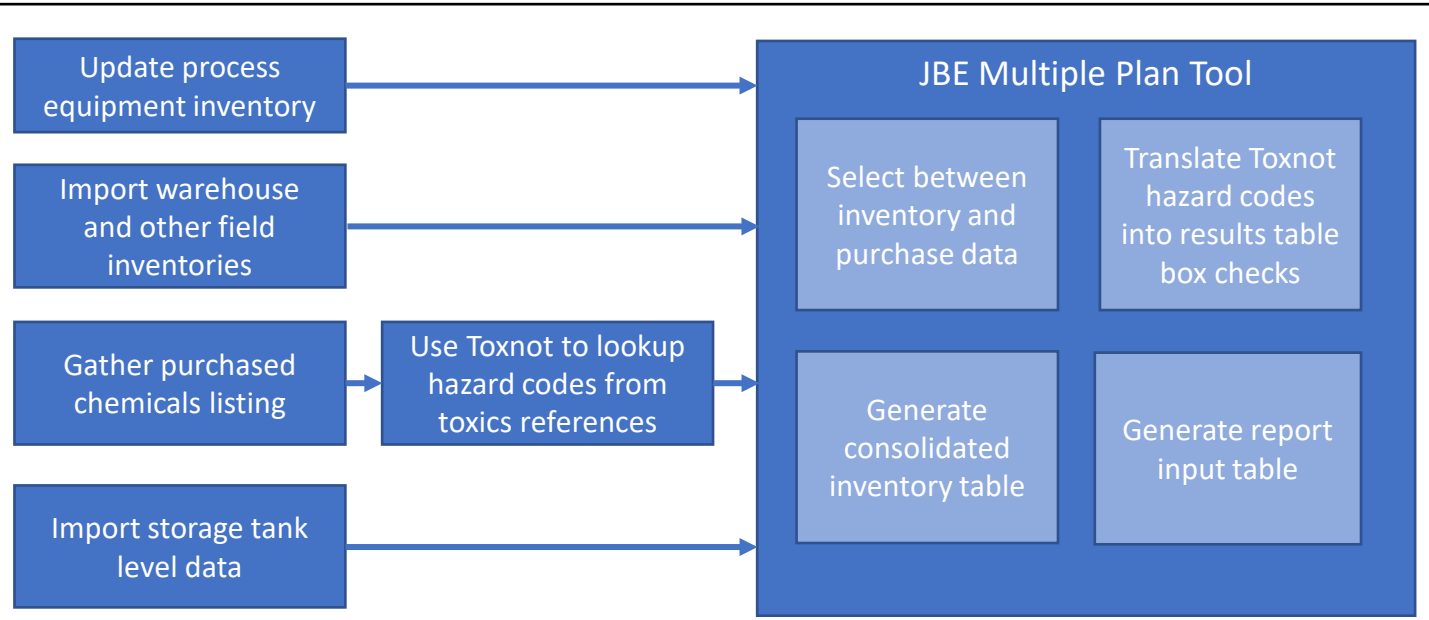
- Aggregating data from lots of sources to produce an inventory means it can be very hard to check the process unless raw data can be connected to the final report electronically

Solution:

- JBE has refined the process over more than five years of reporting experience for its clients
- Creating hazard information for new chemicals added each year is time-consuming and difficult to make consistent
- Entering the results into the EPA Tier-Two Submit tool or a state version can be error-prone if the data is not delivered in a format that supports how the receiving tool asks for it
- JBE's tool handles a key issue – making sure chemicals are aggregated and compared to threshold quantities properly.

Benefits:

- An electronic pathway from raw data format to upload tool format is key to reducing errors such as leaving out a chemical
- Showing all the work steps makes it much faster to conduct a comprehensive QA of the results



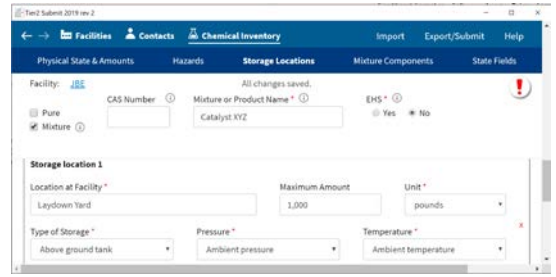
EPA 312 Submit Report Input Table

Click this button when the Consolidated Tab has been added to or removed:

Update Chemical Names

	Physical Hazard			Health Hazard									EHS		
	Explosive	Flammable	Oxidizer	Acute Toxicity	Skin Corrosion or Irritation	Serious Eye Damage or Eye Irritation	Respiratory or Skin Sensitization	WH Chem Pad	Container	Pressure	Temperature (deg F)	WWTP Area, South of Rail Loading	Hydrogen Sulfide	7783-06-4	
Chemical Name (Custom Mapping/SDS Match)								Max Amt	C	P	T	Max Amt	Max Code	lb	Wt %
Flogard MS 6206					X			12,000	DRUM	14.7	62	0		""	
Foamtrol AF1440		X		X	X		X	6,000	DRUM	14.7	62	0		""	
Heavy Crude Oil Diluent		X		X	X		X	256,900	TANK	14.7	62	0	02	116	0.10%

Chemical Classification (Heat Exchanger, Process Vessel, Storage Tank or Vendor)	Tab Reference	Description	Total Mass Stored (Maximum)
			(lb)
Heat Exchanger	Heat Exchangers	E-2107 / Desalted Crude / H	20,000
Storage Tank	2019 Tank_Database	TANK #066	40,000
Storage Tank	2019 Tank_Database	TANK #067	60,000
Storage Tank	2019 Tank_Database	TANK #069	0
Storage Tank	2019 Tank_Database	TANK #177	80,000
Vendor	2019 Purchased Chemicals	CORTROL IS3000	12,500



TRI Threshold Determination Tool

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Problem/Challenge:

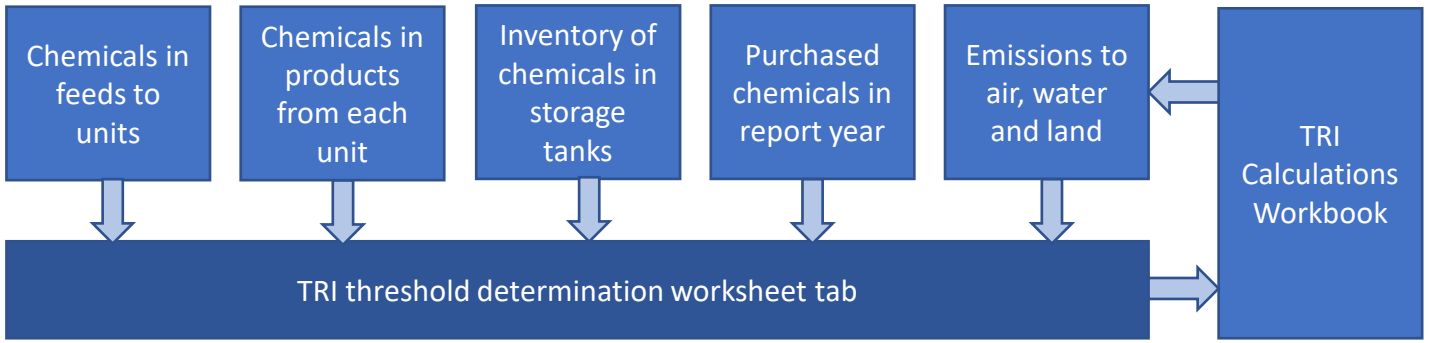
- Failure to perform a compliant TRI report threshold analysis could result in failure to report a chemical and leave a facility open to enforcement or fines
- The process is complicated because of the role of de minimis exemptions the fact that you have to calculate emissions as part of the threshold process (essentially a “do-loop”)

Solution:

- JBE has developed a comprehensive process to perform and document the threshold determination that is linked to the determination of emissions
- The process has been reviewed by EPA NEIC in a compliance audit and judged “one of the best we’ve seen”

Benefits:

- Making the threshold determination part of the annual TRI report preparation will reduce the chances of overlooking a chemical; whereas an evergreen approach taken by some runs that risk with each process change each year
- Aggregating TRI compounds in all purchased chemicals comprehensively helps avoid the risk posed by failing to report, but can also help identify chemicals that can be dropped from reporting for a good news story.



Manufactured Products

Unit	Product	Volume	Annualized Quantity	Benzene	Hydrogen Sulfide	Methanol
		(bpd)	(lb/yr)	(lb)	(lb)	(lb)
				71-43-2	7783-06-4	67-56-1
Crude Unit	Crude	100,000	27,988,800	5,597,760	-	-
Products:	Raw Naph	33,000	9,236,304	184,726	-	-
	Raw Kero	17,000	4,758,096	-	-	-
	Raw Diesel	4,000	1,119,552	2,239	-	-
	LVGO	8,000	2,239,104	-	-	-
	HVGO	8,000	2,239,104	-	-	-
	Asphalt	25,000	6,997,200	-	13,994	-
FCC Unit	Treated Gas Oil	1,807	505,726	2,493	-	-
Products:	LCO	159	44,613	2,231	-	-
	Cat Gas	1,587	444,319	533,183	-	-
	Prop/But	60	16,793	-	-	-

- Manufactured products are estimated based on the products for each unit
- Chemicals processed are estimated from the feed to each unit
- Otherwise used chemicals are based on purchase data
- Note that impacts from wastes, spills and air and water emissions are included

Source Description	Benzene (lb)	Hydrogen Sulfide (lb)	Methanol (lb)
Manufactured	25,000	127,000	-
Added Contribution - Monitored Fugitive Leaks	100	0	-
Added Contribution - Unmonitored Fugitive Leaks	1,000	-	-
Added Contribution - WW Separator Air Emissions	1,000	-	-
Added Contribution - Flare 1 Air Emissions	1,000	72	-
Added Contribution - Storage Tank Air Emissions	500	43	-
Added Contribution - Loading Air Emissions	1,000	-	-
Added Contribution - Sewer Air Emissions	2,000	-	-
Added Contribution - One Time Releases to Air	0	1	-
Added Contribution - One Time Releases to Land	0	1	-
Added Contribution - One Time Releases to Water	0	-	-
Added Contribution - Wastewater Effluent	-	-	-
Subtotal	31,660	127,438	-
Less Threshold	25,000	25,000	25,000
Manufactured - TRI Chemicals Exceeding Threshold	6,660	102,438	
Processed Products	500,000	250,000	-
Added Contribution - Wastes	1,000	1,500	-
Less Threshold	25,000	25,000	25,000
Subtotal	476,000	226,500	-
Processed - TRI Chemicals Exceeding Threshold	476,000	226,500	
Otherwise Used (Threshold Exceeded)	-	-	5,950
Discard - Concentration Below De Minimis Level			
Subtotal	-	-	5,950
Less Threshold	10,000	10,000	10,000
Otherwise Used - TRI Chemicals Exceeding Threshol			
For Reference:			
Form R in 2017?	Yes	Yes	Yes
Form R in 2018?	Yes	Yes	No

Regulation Download Tool

jbe

Problem/Challenge:

- Complete regulatory citation numbers are hard to construct from the hierarchy of lettering and numbering when each element is several sentences long
- The best regulation compliance listing is a matrix that includes full text and full numbering of it

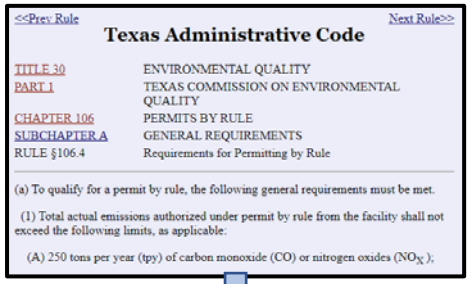
Solution:

- Each regulation publisher has its own publication method and each regulatory entity has its own numbering system
- JBE has developed a process to read the sequence and deduce the numbering that it describes
- The VBA code to drive the import process is custom for each situation; it's not perfect but it can be manually adjusted as needed

Benefits:

- A compliance register cannot be considered viable unless the capability to develop full text numbering is part of the construction process
- If well-constructed, the current set of requirements can be downloaded, processed and checked in a few minutes
- Otherwise, a manual cut-and-paste operation is much more labor-intensive

Select the desired chapter and section(s) → Copy/paste the raw regulation text with its embedded numbering into the JBE workbook → Engage the WB macro via a process button → Check and use the resulting matrix of numbered requirement text cells



<<Prev Rule Next Rule>>

Texas Administrative Code

TITLE 30	ENVIRONMENTAL QUALITY
PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 106	PERMITS BY RULE
SUBCHAPTER A	GENERAL REQUIREMENTS
RULE §106.4	Requirements for Permitting by Rule

(a) To qualify for a permit by rule, the following general requirements must be met.

(1) Total actual emissions authorized under permit by rule from the facility shall not exceed the following limits, as applicable:

(A) 250 tons per year (tpy) of carbon monoxide (CO) or nitrogen oxides (NO_X);

- Complex formulas take advantage of the hierarchy in citation numbering to "calculate" the full citation number
- Having full citations in place and requirement text arranged in cells is key to creating a requirement compliance roadmap
- JBE has created formula sets for the e-CFR, TX, MT & OH

	A	B	C	D	E	F	G	H	K	L
1	Title	Chap	ubcha	Rul	(a)	(1)	(A)	(i)	Concatenate	Rule Text
11	30 TAC	106	A	106.4					30 TAC 106.4	**§106.4 Requirements for Permitting by Rule**
12	30 TAC	106	A	106.4	a				30 TAC 106.4(a)	(a) To qualify for a permit by rule, the following general requirements must be met.
13	30 TAC	106	A	106.4	a	1			30 TAC 106.4(a)(1)	(1) Total actual emissions authorized under permit by rule from the facility shall not exceed the following limits, as applicable:
14	30 TAC	106	A	106.4	a	1	A		30 TAC 106.4(a)(1)(A)	(A) 250 tons per year (tpy) of carbon monoxide (CO) or nitrogen oxides (NOX);
15	30 TAC	106	A	106.4	a	1	B		30 TAC 106.4(a)(1)(B)	(B) 25 tpy of volatile organic compounds (vOC), sulfur dioxide (SO2), or inhalable particulate matter (PM);
16	30 TAC	106	A	106.4	a	1	C		30 TAC 106.4(a)(1)(C)	(C) 15 tpy of particulate matter with diameters of 10 microns or less (PM10);
17	30 TAC	106	A	106.4	a	1	D		30 TAC 106.4(a)(1)(D)	(D) 10 tpy of particulate matter with diameters of 2.5 microns or less (PM2.5); or
18	30 TAC	106	A	106.4	a	1	E		30 TAC 106.4(a)(1)(E)	(E) 25 tpy of any other air contaminant except:
19	30 TAC	106	A	106.4	a	1	E	i	30 TAC 106.4(a)(1)(E)(i)	(i) water, nitrogen, ethane, hydrogen, and oxygen; and

Test Data Management Tool

jbe

Problem/Challenge:

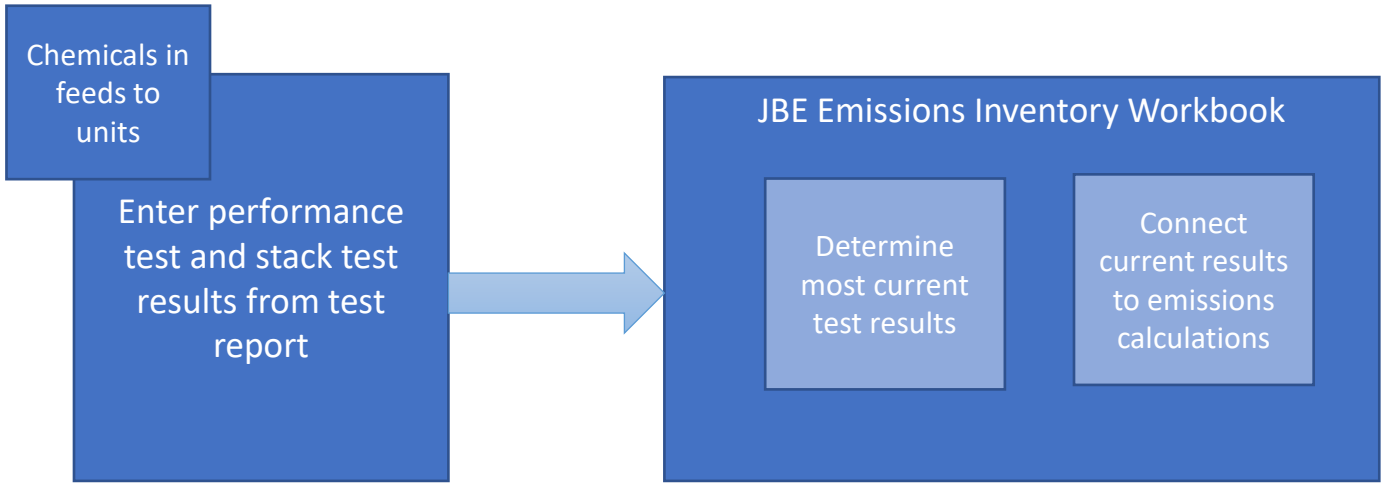
- Emissions calculations that are submitted to an agency must also be compared to permit limits
- Emissions estimates must be based on the latest test data if there is a test
- Keeping up with this data over time is challenging

Solution:

- JBE has developed a unique test results database approach using Excel that can be made part of emissions calculations workbooks
- The key is to organize the data as one contaminant as the source to which the test applies along with the test date
- A complex formula can mark the result as the latest, and this can be connected to the emissions calculation tab in the workbook for calculation and limit comparison
- To be effective, the team must update the list with each test result

Benefits:

- Using the right data is key to achieving permit compliance, and doing this with formulas will reduce the chances for errors of omission.



Stack Testing Log

Legend & Instructions		Manual data entry required. Enter the source name for each source the stack test applies to (multiple rows must be entered for dual stacks), the date of the test, test description (e.g. RATA, annual, semi-annual), pollutant tested (a separate row is required for each pollutant if multiple pollutants are tested in a single stack test), emission factor or emission rate, units of the emission factor/rate).
		Automated calculations requiring no action by user.

Source Name	EPN	Test Date	Test Description	Pollutant / Parameter Tested	Emission Factor/Rate	Units	Equation for Most Recent Test	Most recent test for this pollutant at this source?
Crude Unit Heater	B001	5/8/2015	Engineering test	NOX	0.2500	lbs/MMBtu	=IF(OR(B6="",D6="",,F6="",G6=""),"",IF(D6=MAXIFS($D$6:$D$24,F$6:F$24,F6,C$6:C$24,C6),"Yes","No"))	Yes
Crude Unit Heater	B001	9/3/2012	Engineering test	NOX	0.2700	lbs/MMBtu		No
Crude Unit Heater	B001	12/10/2010	RATA	NOX	0.6000	lbs/MMBtu		No
Crude Unit Heater	B001	9/3/2012	Engineering test	SO2	0.0400	lbs/MMBtu		Yes
Crude Unit Heater	B001	12/10/2010	RATA	SO2	0.0600	lbs/MMBtu		No
Vacuum Unit Heater	B002	5/8/2015	Engineering test	NOX	0.3500	lbs/MMBtu		Yes
Vacuum Unit Heater	B002	3/10/2010	Engineering test	NOX	0.3700	lbs/MMBtu		No
Vacuum Unit Heater	B002	9/3/2012	RATA	NOX	0.3800	lbs/MMBtu		No
Vacuum Unit Heater	B002	9/3/2012	RATA	NOX	0.1000	lbs/MMBtu		No

Safety Data Sheet Hazard Identification jbe

Problem/Challenge:

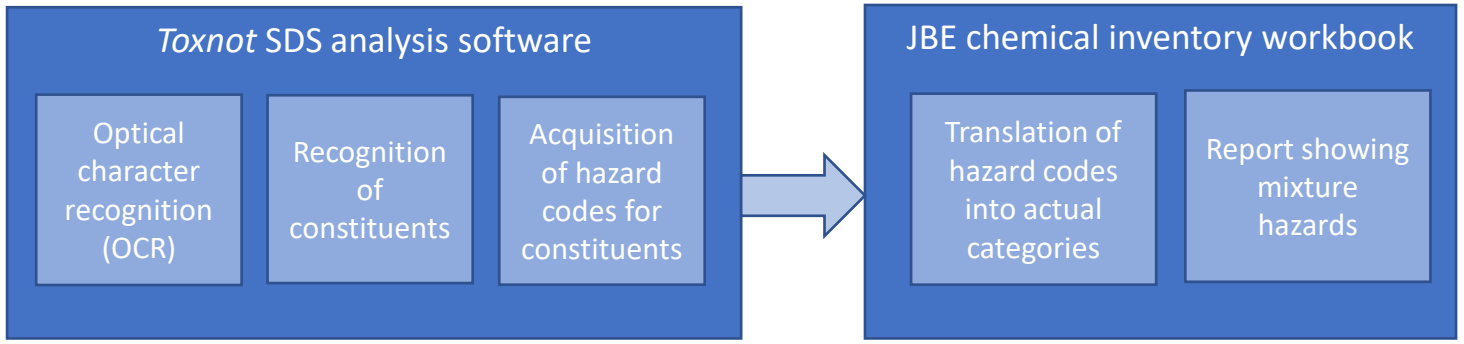
- Making consistent determinations from SDS's for physical and health hazards – i.e., is combustible, is it a chronic hazard?
- Judging proposed chemicals quickly to determine if they should be accepted for use.

Solution:

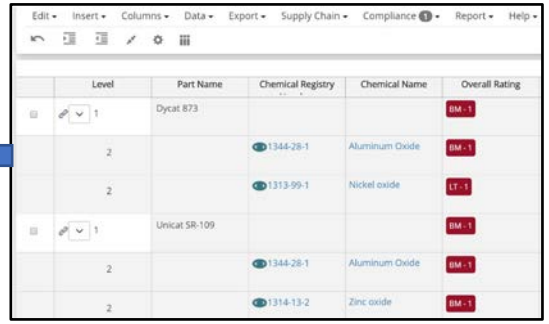
- JBE has identified a unique software product that performs an OCR process on SDS's and locates the constituents.
- The *Toxnot* web application takes the results of the OCR and queries toxicology data online to identify hazards for these constituents that are reported as hazard codes (H Codes)
- JBE has developed a series of clever formulas to convert these results into a hazard table that can be used for Tier Two reporting or chemical use approval

Benefits:

- Reducing labor required to analyze an SDS to identify hazards. This can be important if a facilities proposes lots of chemicals for use



2019 New Products - H-Codes	
Name	**HCodes**
Acetone	H066 H225 H302 H304 H315 H319 H335 H336 H340 H341 H350 H370 H372 H401 H411
Foamtrol AF1440	H226 H304 H315 H332 H335 H336 H370 H372
Isopropanol	H225 H319 H335 H336 H370 H372 H373
Isopropyl Alcohol	H225 H319 H335 H336 H370 H372 H373
Methanol	H225 H301 H302 H311 H319 H331 H336 H370 H372
Potassium Hydroxide	H290 H301 H302 H304 H314 H370 H372
Soda Ash	H318 H319 H332 H335 H336
Zinc Sulfate	H302 H318 H371 H400 H410



H-Code	Description of Code	Health Hazard									
		Acute Toxicity	Skin Corrosion or Irritation	Serious Eye Damage or Eye Irritation	Respiratory or Skin Sensitization	Germ Cell Mutagenicity	Carcinogenicity	Reproductive Toxicity	Specific Target Organ Toxicity	Aspiration Hazard	Simple Asphyxiant
H-300 Health Hazards											
H300	Fatal if swallowed.	H300									
H301	Toxic if swallowed.	H301									
H302	Harmful if swallowed.	H302									
H304	May be fatal if swallowed and enters airways.	H304									
H305	May be harmful if swallowed and enters airways.	H305									
H310	Fatal in contact with skin.	H310									
H311	Toxic in contact with skin	H311									
H312	Harmful in contact with skin.		H312								
H313	May be harmful in contact with skin.		H313								
H314	Causes severe skin burns and eye damage.	H314		H314							
H315	Causes skin irritation.		H315								
H316	Causes mild skin irritation.				H316						
H317	May cause an allergic skin reaction.				H317						

Click this button when the Consolidated Tab has been added to or rer

Update Chemical Names

Chemical Name (Custom Mapping/SDS Match)	Health Hazard									
	Acute Toxicity	Skin Corrosion or Irritation	Serious Eye Damage or Eye Irritation	Respiratory or Skin Sensitization	Germ Cell Mutagenicity	Carcinogenicity	Reproductive Toxicity	Specific Target Organ Toxicity	Aspiration Hazard	Simple Asphyxiant
Acetone	X	X		X	X	X		X	X	
Anhydrous Ammonia	X		X	X					X	
Aqueous Ammonia	X		X	X				X	X	
Crude Oil	X	X		X	X	X	X	X	X	
Ethanol	X	X		X	X	X		X	X	