Emissions Inventory Guidance

January 23, 2020

Presented by
Oklahoma Department of Environmental Quality
Emissions Inventory Section

Contact Information

- **Program Manager:**
  - Carrie Schroeder Carrie.Schroeder@deq.ok.gov
- **Emissions Inventory Section Staff:**
  - Michelle Horn Michelle.Horn@deq.ok.gov
  - Michael Ketcham Michael.Ketcham@deq.ok.gov
  - Shelby Willeby Shelby.Willeby@deq.ok.gov
  - Grant Loney Grant.Loney@deq.ok.gov

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Today's Agenda

- Introduction – *Carrie Schroeder* *(slides 1-36)*
- Emissions Inventory (EI) Basics – *Shelby Willeby* *(slides 37-106)*
- *Break*
- Emissions Calculations – *Grant Loney* *(slides 107-150)*
- *Break*
- SLEIS QC and Common Mistakes – *Michael Ketcham* *(slides 151-190)*

Q&A scheduled after each presentation

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Intro Presentation Objectives

- Emissions Inventory Introduction
- Air Programs – Tier II, Green House Gas Reporting(GHGR), Toxic Release Inventory (TRI)
- ODEQ Website Navigation
- SLEIS
- Invoicing, Ownership, and Responsible Officials

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What is an Emissions Inventory?

What is an Emissions Inventory?

- A report of actual emissions of regulated pollutants during the previous year

- Provides a description to DEQ of your facility and its operations

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Required to File an Inventory

- The owner or operator of any facility that is a source of Regulated Air Pollutants (RAP)
- Facilities with Individual Permits, or registered under a General Permit. *Facilities registered under a Permit by Rule need only report if they registered in 2019 (whether operating or not in 2019)*
- "Special Inventories" upon request by AQD Director
- Exception: Permit Exempt & De Minimis facilities are not required to file an inventory

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Site Specific Questions

Remember
Air Quality Rules
Always Apply

https://www.deq.ok.gov/asd/rules-and-regulations/

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Other Air Programs

Tier II Reporting

https://www.deq.ok.gov/land-protection-division/chemical-reporting-and-preparedness/tier-ii/tier-ii-reporting/

- Emergency Planning and Community Right-to-Know Act (EPCRA)
- Established to help communities plan for potential chemical emergencies
- Administered by ODEQ Land Protection Division: Due on March 1 of each year
- Information: 405-702-5100

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Toxics Release Inventory (TRI) Program

https://www.epa.gov/toxics-release-inventory-tri-program

- The TRI is a resource for learning about toxic chemical releases and pollution activities reported by industrial and federal facilities

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TRI Screening Tool

https://www.epa.gov/toxics-release-inventory-tri-program/tri-threshold-screening-tool

EPA United States Environmental Protection Agency

Environmental Topics | Laws & Regulations | About EPA | Search EPA.gov

CONTACT US SHARE

Toxics Release Inventory (TRI) Program

- TRI Program Home
- What is TRI?
  - Covered Chemicals
  - Covered Industry Sectors
- Find, Understand & Use TRI
  - TRI Data & Tools
  - TRI National Analysis
  - Data Quality
  - What You Can Do
- Reporting for Facilities
  - Enforcement
  - GuideME
  - Laws & Regulatory Activities
  - Pollution Prevention
    - TRI P2 Resources
  - TRI-MEweb
- TRI Site Map

TRI Threshold Screening Tool

The Toxics Release Inventory (TRI) Threshold Screening Tool uses a step-by-step questionnaire to help facilities determine if they meet or exceed established facility, employee, and chemical thresholds and as such, may be required by Section 313 of the Emergency Planning and Community Right to Know Act (EPCRA) to report to the TRI Program.

This tool is only intended to help facilities determine if they are required to submit annual TRI data; it does not help facilities fill out TRI reporting forms. We suggest printing out the threshold screening report at the end of the tool's third section for your reference.

Note: The tool provides reporting requirements for reporting year 2017.

- NEW EPA has recently upgraded the Threshold Screening Tool to help you determine if your facility is required to submit a TRI reporting form. We would appreciate your feedback on the tool and how we can improve it. Within the tool, please click the "Provide Feedback" button at the top center of the screen. Start using the TRI Threshold Screening Tool

TRI Reporting Requirements

Your facility is required to report to the TRI Program if it meets ALL of these three threshold criteria:

- The facility is included in a TRI-covered North American Industry Classification System (NAICS) code; and

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Greenhouse Gas Reporting

- In response to the FY2008 Consolidated Appropriations Act, **EPA issued 40 CFR 98 Mandatory Greenhouse Gas Reporting**
- Under the rule, suppliers of fossil fuels or industrial greenhouse gases(GHG), manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to **submit annual reports to EPA starting with the 2010 reporting year**
- **Pollutants:** carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF_6), and other fluorinated gases including nitrogen trifluoride (NF_3) and hydrofluorinated ethers (HFE)

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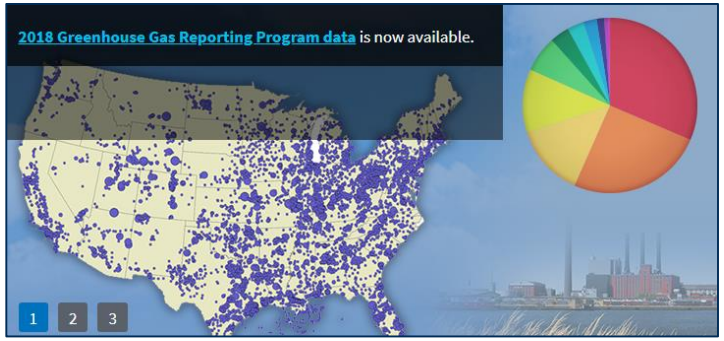
Greenhouse Gas Reporting

- GHGRP is a Federal requirement
- DEQ is not involved in the implementation or reporting of the Greenhouse Gas Inventory
- EPA Greenhouse Gas Reporting Program
- EPA Greenhouse Gas Applicability Tool
- EPA Electronic Greenhouse Gas Reporting Tool (e-GGRT)

www.epa.gov/ghgreportinghttps://www.epa.gov/ghgreporting



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EPA's GHG Reporting Program

https://www.epa.gov/ghgreporting/ghg-reporters

EPA United States Environmental Protection Agency

Environmental Topics | Laws & Regulations | About EPA | Search EPA.gov

Greenhouse Gas Reporting Program (GHGRP)

CONTACT US

SHARE

- Greenhouse Gas Reporting Program (GHGRP) Home
- GHGRP Data
- **For GHG Reporters**
- Learn About GHGRP
- Help Center

For GHG Reporters

In response to the FY2008 Consolidated Appropriations Act (PDF) (613 pp, 1.5MB, About PDF) (H.R. 2764; Public Law 110-161), EPA issued the Greenhouse Gas Reporting Rule (74 FR 56260) which requires reporting of greenhouse gas (GHG) data and other relevant information from large sources and suppliers in the United States.

The For GHG Reporters section provides information and resources for businesses and institutions that are or may be subject to reporting under the Greenhouse Gas Reporting Program (GHGRP). The pages in this section provide more detailed GHGRP information.

Topic	Description
Proposed Rules	Currently active regulatory proposals related to the GHGRP.
Resources by Subpart	Guidance and supporting materials arranged by industry.
Training and Testing Opportunities	Current training opportunities and archived training presentations.

READ THE CURRENT RULE

Quick Help

- GHG Reporting Rule
- Reporter FAQs EXIT
- Applicability Tool
- General Fact Sheet

Go to Rule Help Center

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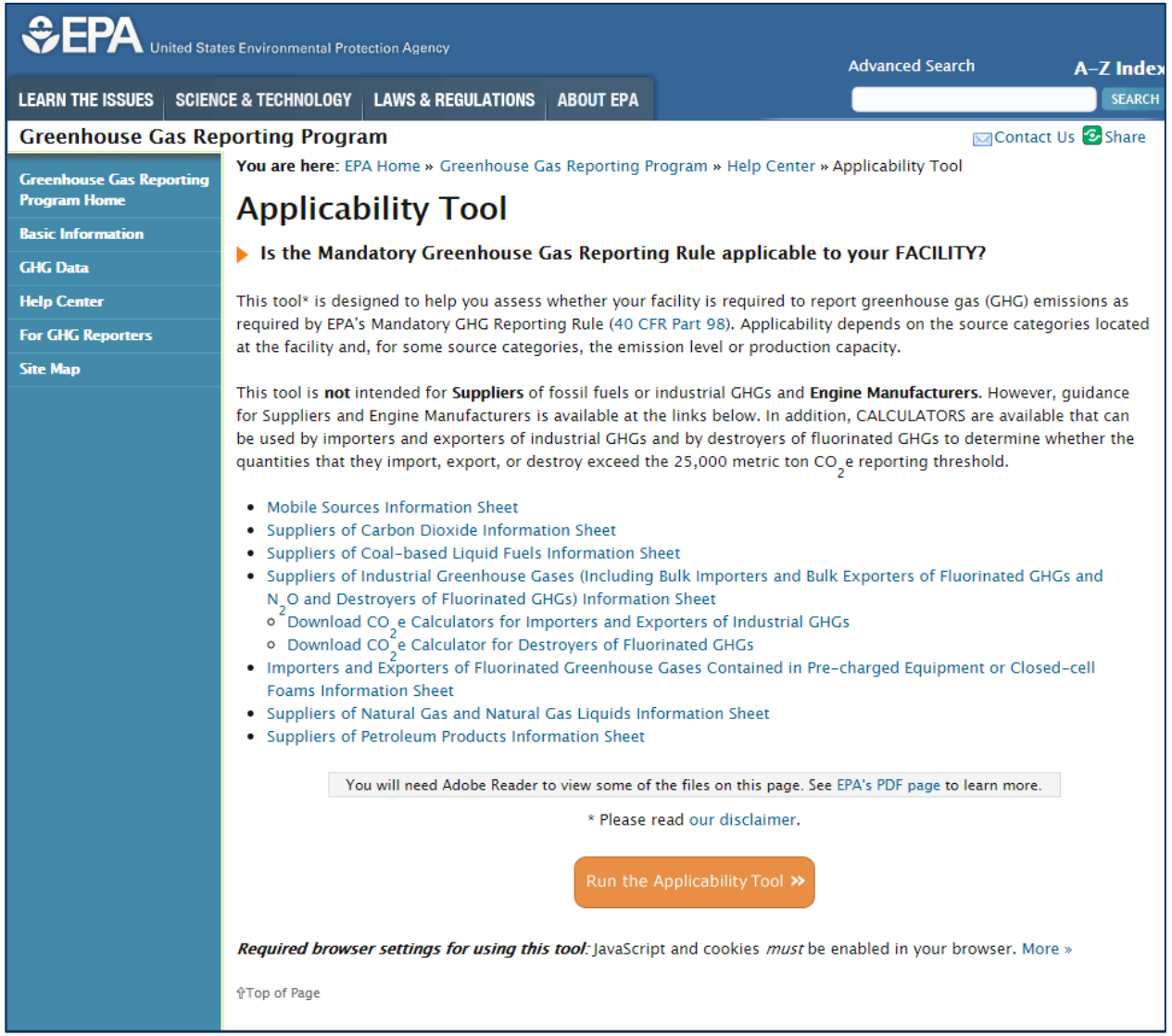
EPA's Applicability Tool

https://www3.epa.gov/ghgreporting/help/tool2014/index.html



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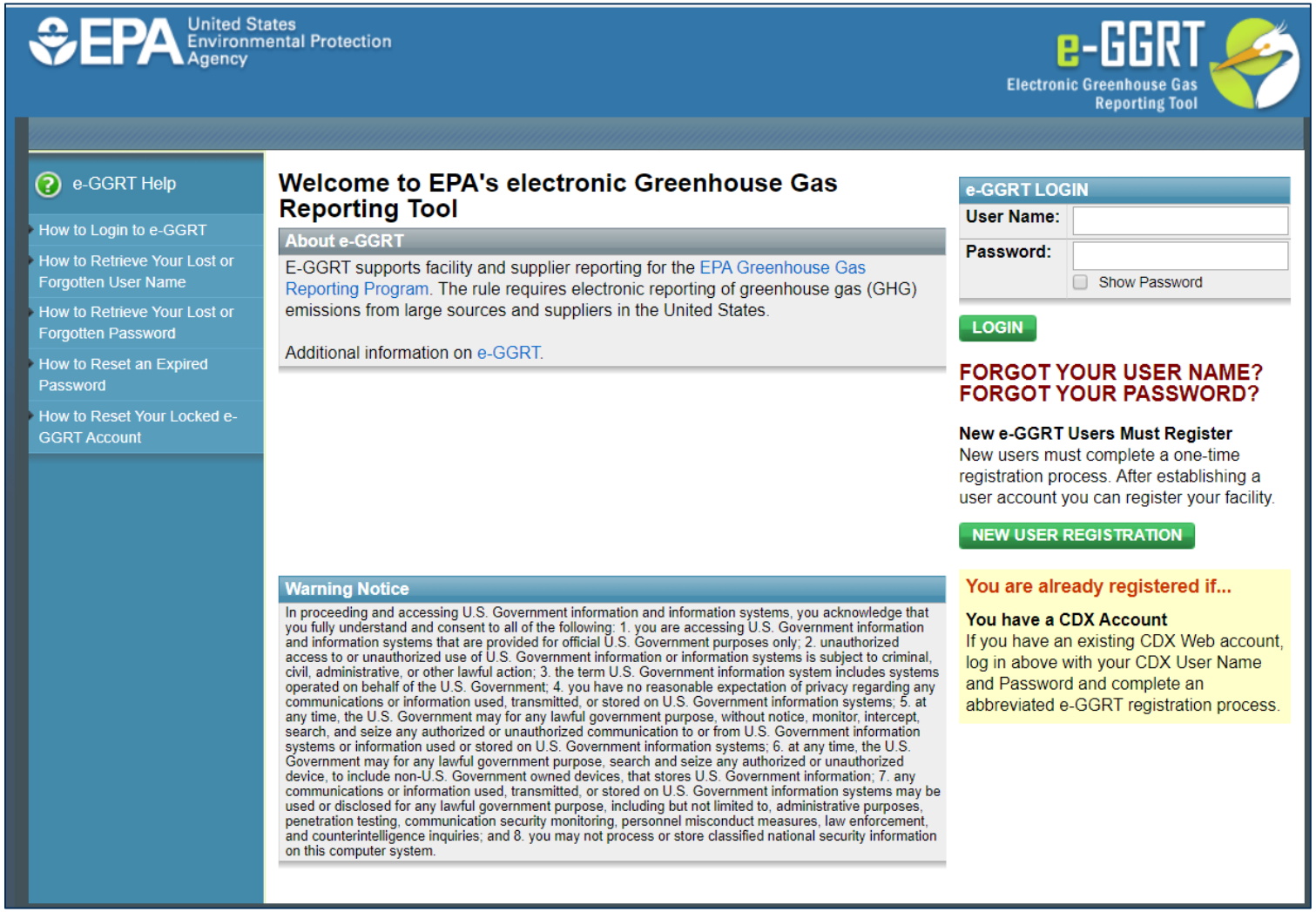
EPA's e-GRTT

https://ghgreporting.epa.gov/ghg/login.dowl



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Emissions Inventory Webpage Navigation

https://www.deq.ok.gov/air-quality-division/emissions-inventory/

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SLEIS

State and Local Emissions Inventory Reporting Tool

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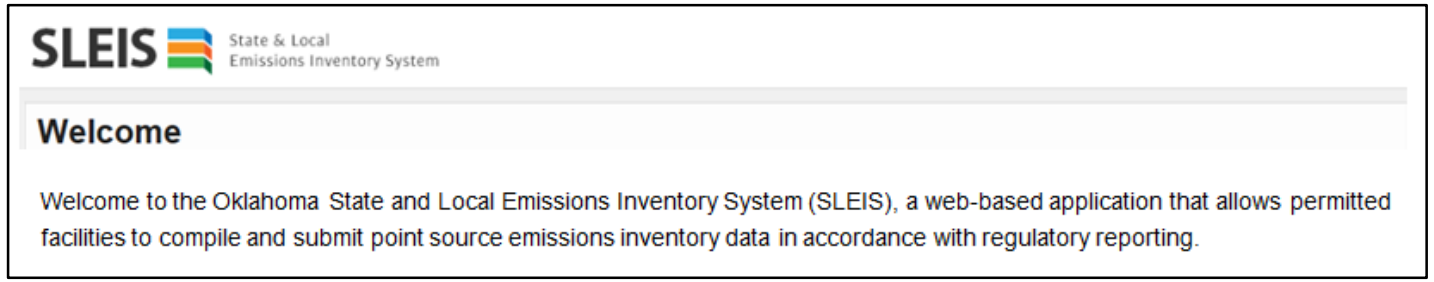
What Is SLEIS?

- DEQ purchased and customized SLEIS from Windsor Solutions to replace Redbud
- SLEIS is currently used by several other states
- SLEIS is cross-browser compatible
- SLEIS can accept data through spreadsheet upload
- Companies can submit amendments through SLEIS
- SLEIS provides a streamlined process for DEQ to use in submitting data to the EPA



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New in SLEIS

- Spreadsheet upload
- SLEIS user roles
  - Viewer – can view report
  - Editor – can view, start, modify and edit data
  - Administrator – Can change users' roles
  - Submitter – Can submit inventory, must be an RO
- Greater validation
- Batch Processing

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Important SLEIS Differences

- All amendments are now done in SLEIS, we are no longer using Turn Around Documents (TADs)
- If you make an inventory submission in SLEIS and determine you need to change something, you must initiate an inventory amendment to make changes

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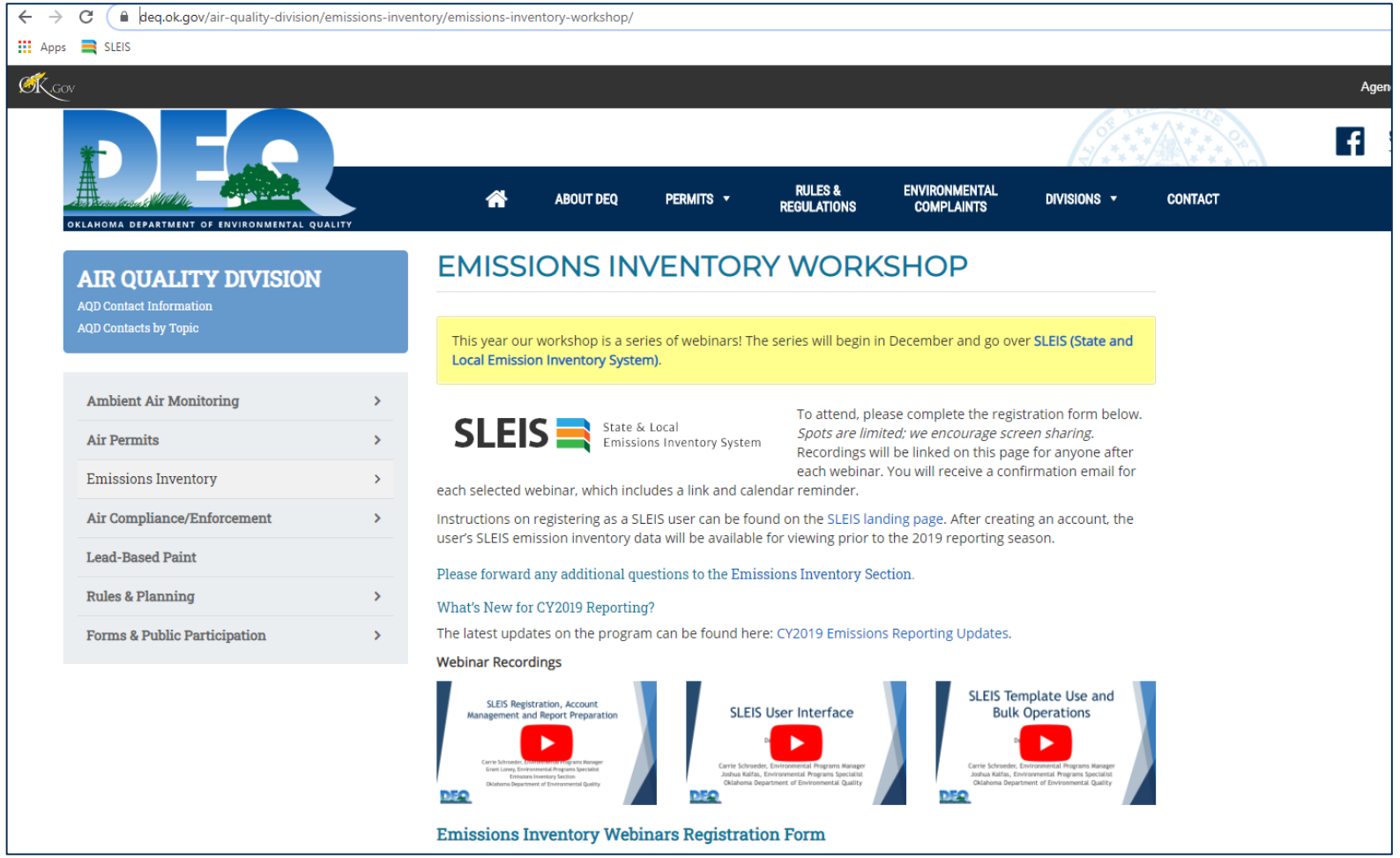
Webinar Links from our Website

https://www.deq.ok.gov/air-quality-division/emissions-inventory/emissions-inventory-workshop/



Invoicing and Annual Operating Fees

Invoicing

- Two years in arrears
  - 2018 inventories submitted by April 1, 2019 - billed in 2020
  - 2019 inventories submitted by April 1, 2020 - billed in 2021
  - This allows the Emission Inventory Section ample time for quality control
- The Title V operating fee was set at $32.30 per ton in 2008, and it is adjusted yearly based on the change in the annual Consumer Price Index
  - The 2020 Title V fee is $39.86 per ton
  - The minor source fee is fixed at $25.12 per ton

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Invoicing Continued

- Pollutants can not be double billed
  - We split your reported Total VOC into HAP and non-HAP VOC for billing
  - Only bill for PM-10. (PM-2.5 is a subset of PM-10)

)F OKLAHOMA - 2016 REPORTED EMISSIONS
(SEE INSTRUCTIONS ON REVERSE)

TONS OF REGULATED AIR POLLUTANT					
HAP	NOX	PM-10	SOX	TOX	VOC
24.656	1,257.247	7.871	2.035	0.000	2,290.994

  - When calculating PBR annual operating fees, the last reported inventory emission amounts are used

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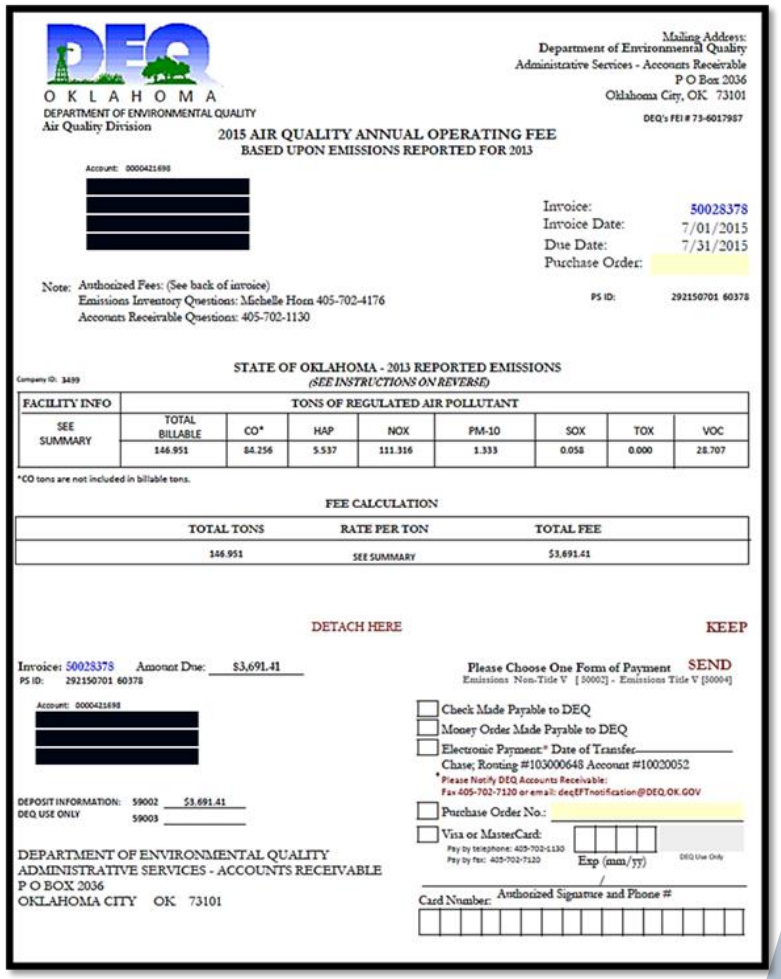
Invoice

- Invoices sent out July 1st
- Vital to have correct Responsible Official information
- A 100-882 must be signed and submitted to designate a Responsible Official



OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Mailing Address:
Department of Environmental Quality
Administrative Services - Accounts Receivable
P O Box 2036
Oklahoma City, OK 73101

DEQ's FEI # 73-6017957

OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Division

2015 AIR QUALITY ANNUAL OPERATING FEE
BASED UPON EMISSIONS REPORTED FOR 2013

Account: 0000421698
[redacted]

Invoice: 50028378
Invoice Date: 7/01/2015
Due Date: 7/31/2015
Purchase Order:

Note: Authorized Fees: (See back of invoice)
Emissions Inventory Questions: Michelle Horn 405-702-4176
Accounts Receivable Questions: 405-702-1130

PS ID: 292150701 60378

Company ID: 3499

STATE OF OKLAHOMA - 2013 REPORTED EMISSIONS
(SEE INSTRUCTIONS ON REVERSE)

FACILITY INFO	TONS OF REGULATED AIR POLLUTANT							
SEE SUMMARY	TOTAL BILLABLE	CO*	HAP	NOX	PM-10	SOX	TOX	VOC
	146.951	84.256	5.537	111.316	1.333	0.058	0.000	28.707

*CO tons are not included in billable tons.

FEE CALCULATION

TOTAL TONS	RATE PER TON	TOTAL FEE
146.951	SEE SUMMARY	$3,691.41

DETACH HERE KEEP

Invoice: 50028378 Amount Due: $3,691.41
PS ID: 292150701 60378

Account: 0000421698
[redacted]

DEPOSIT INFORMATION: 59002 $3,691.41
DEQ USE ONLY 59003

DEPARTMENT OF ENVIRONMENTAL QUALITY
ADMINISTRATIVE SERVICES - ACCOUNTS RECEIVABLE
P O BOX 2036
OKLAHOMA CITY OK 73101

Please Choose One Form of Payment SEND
Emissions Non-Title V [50002] - Emissions Title V [50004]

- ☐ Check Made Payable to DEQ
- ☐ Money Order Made Payable to DEQ
- ☐ Electronic Payment:* Date of Transfer_____
  Chase; Routing #103000648 Account #10020052
  *Please Notify DEQ Accounts Receivable:
  Fax 405-702-7120 or email: deqEFTnotification@DEQ.OK.GOV
- ☐ Purchase Order No.:
- ☐ Visa or MasterCard:
  Pay by telephone: 405-702-1130
  Pay by fax: 405-702-7120
  Exp (mm/yy) / DEQ Use Only
  Card Number: Authorized Signature and Phone #

#100-882 Designation of Responsible Official

https://www.deq.ok.gov/air-quality-division/forms-public-participation/air-forms/

100-882 Designation of Responsible Official/SLEIS Registration

Oklahoma Department of Environmental Quality,
Air Quality Division, P.O. Box 1677, Oklahoma City, OK 73101-1677
(405) 702-4100 (Tel), (405) 702-4101 (Fax)

Please mail completed forms to the Air Quality Division office or email to aei@deq.ok.gov
All SLEIS User Registrations Require a Responsible Official Signature

Section 1: Responsible Official (RO) Registration			
RO Name			
RO Address			
City		Phone/Extension	
State, Zip		Cell Phone	
RO Email (required)		Fax	

Section 2: Responsible Official SLEIS Role Selection – All ROs are assigned as Submitter, Administrator, and Viewer. The Editor role is optional.

Assigned		Submitter – Can initiate submission process
		Administrator – Can remove or change a user's role (assigned to same company)
		Viewer – Can view the contents of a report, but cannot make any data modifications
Optional	☐	Editor – Can view, start, modify, enter a report (facility inventory and emissions data)

Section 3: Company and Facility Information – An RO can be associated with multiple companies and facilities. An RO can be associated with all the facilities at a company or only a portion of facilities at a company. Check the all facilities checkbox, list your associated facilities below, or attach a list of your associated facilities.

Company Name(s)	
☐	Assign RO to all facilities at the Company(s)
Facility Name(s)	

Section 4: Certification – I certify that I am a Responsible Official for the above-listed facility(s) meeting the definition of OAC 252:100-1-3.

RO Signature | Title | Date

#100-733 SLEIS User Registration

https://www.deq.ok.gov/air-quality-division/forms-public-participation/air-forms/

100-733 SLEIS User Registration
Oklahoma Department of Environmental Quality,
Air Quality Division, P.O. Box 1677, Oklahoma City, OK 73101-1677
(405) 702-4100 (Tel), (405) 702-4101 (Fax)

Please mail completed forms to the Air Quality Division office or email to aei@deq.ok.gov

Section 1: SLEIS User Registration				
Name				
Contact	☐	Check if you are the primary facility contact for emissions inventory issues		
	☐	Check if you are a consultant or contractor for the facility(s)		
Address				
City			Phone/Extension	
State, Zip			Cell phone	
Email (required)			Title	

Section 2: SLEIS Role Selection – Choose either Editor or Viewer. **Consultants and contractors cannot choose the Administrator role.**		
Optional	☐	Administrator – Can remove or change a user's role (assigned to same company)
Check one	☐	Editor – Can view, start, modify, and edit a report (facility inventory and emissions data)
	☐	Viewer – Can view the contents of a report, but cannot make any data modifications

Section 3: Company and Facility Information – A SLEIS user can be associated with multiple companies and facilities. A SLEIS user can be associated with all the facilities at a company or only a portion of facilities at a company. Check the all facilities checkbox, list your associated facilities below, or attach a list of your associated facilities.

Company Name(s)	
☐	Assign SLEIS user to all facilities at the Company(s)
Facility Name(s)	

Section 4: Certification – All SLEIS User Registration forms require a Responsible Official's signature.
I certify that I am a Responsible Official for the above-listed facility(s) meeting the definition of OAC 252:100-1-3.

RO Name	RO Signature	Title	Date

To update the Main Facility Contact, add a consultant, or add an additional SLEIS user submit form 100-733

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Ownership & Annual Operating Fee Liability

- **Change of ownership** – New owners **assume liability** for payment of the annual operating fees based on emission reported in years of operation prior to transfer of ownership (However purchase contracts can shift the liability to the previous owner)

- To change the ownership of a facility a **Form 100-883** must be submitted

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Change of Ownership

Responsibilities of the:

- **Transferor (Seller)**

  "The transferor shall notify the DEQ using a prescribed form **no later than 30 days** following the change in ownership."

- **Transferee (Purchaser)**

  "The transfer of ownership of a stationary source or a facility is an administrative amendment that shall subject the new owner or operator to existing permit conditions &/or compliance schedules."

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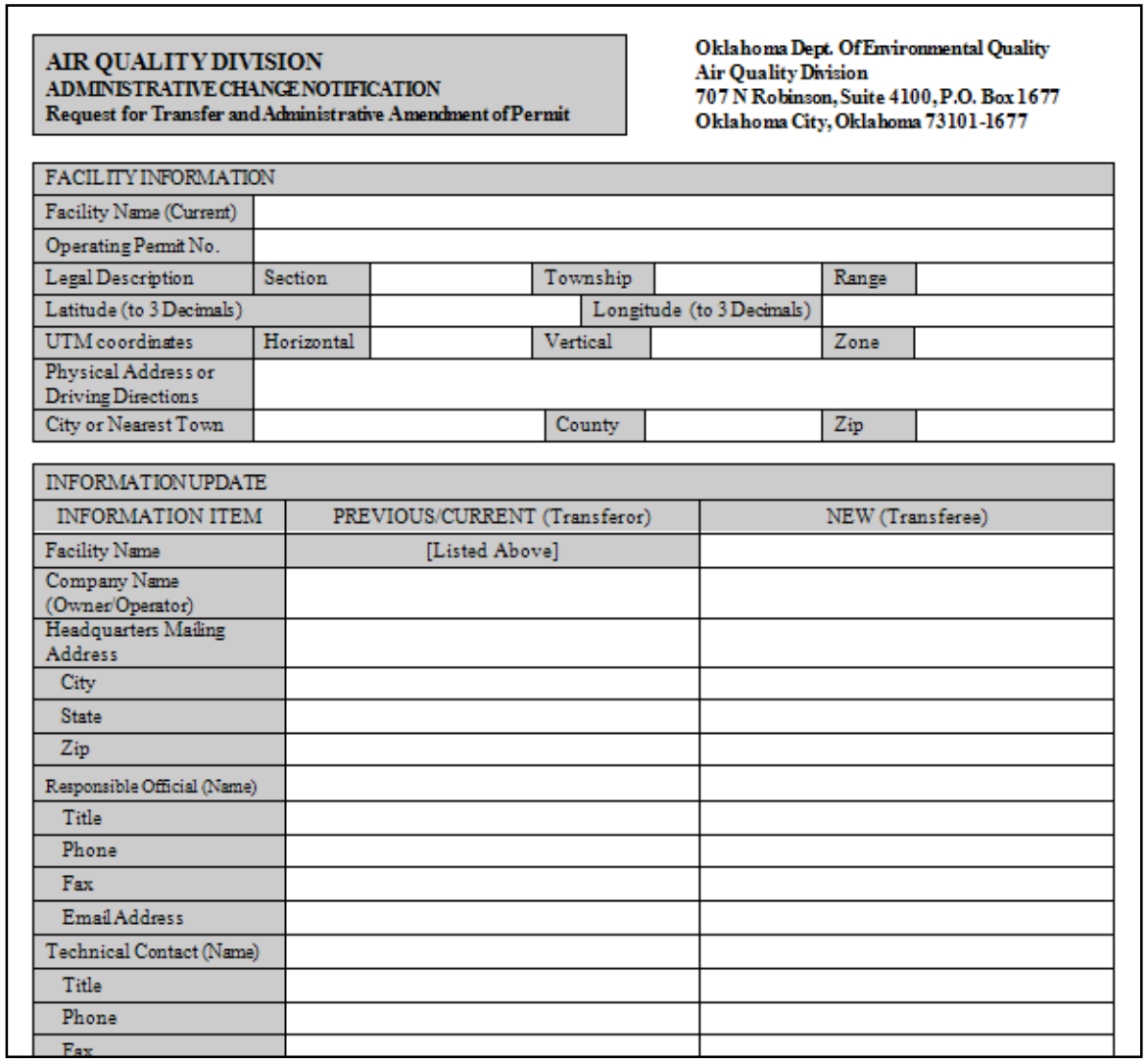
#100-883 Administrative Change Notification (Transfer of Ownership)

https://www.deq.ok.gov/air-quality-division/forms-public-participation/air-forms/



AIR QUALITY DIVISION
ADMINISTRATIVE CHANGE NOTIFICATION
Request for Transfer and Administrative Amendment of Permit

Oklahoma Dept. Of Environmental Quality
Air Quality Division
707 N Robinson, Suite 4100, P.O. Box 1677
Oklahoma City, Oklahoma 73101-1677

FACILITY INFORMATION						
Facility Name (Current)						
Operating Permit No.						
Legal Description	Section		Township		Range	
Latitude (to 3 Decimals)			Longitude (to 3 Decimals)			
UTM coordinates	Horizontal		Vertical		Zone	
Physical Address or Driving Directions						
City or Nearest Town			County		Zip	

INFORMATION UPDATE		
INFORMATION ITEM	PREVIOUS/CURRENT (Transferor)	NEW (Transferee)
Facility Name	[Listed Above]	
Company Name (Owner/Operator)		
Headquarters Mailing Address		
City		
State		
Zip		
Responsible Official (Name)		
Title		
Phone		
Fax		
Email Address		
Technical Contact (Name)		
Title		
Phone		
Fax		

Important Dates

- 2019 reports created in SLEIS by January 1
- Emission Inventories **due April 1**
- Deadline with approved 30 day extension – May 1
- Invoices mailed July 1
- Operating Fees **due July 31**

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Resources & Help

- Sometimes the workshop is just a starter
- You can e-mail or call us
- You are welcome to come into our office
  - Schedule a time if you need one-on-one help
  - Bring your laptop, spreadsheets & other pertinent information

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General Contact Information

- **Emission Inventory email:** aei@deq.ok.gov
- **Air Quality front desk:** 405-702-4100

  Questions on air emission inventory, compliance & enforcement, permitting, rules

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Questions?

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Emission Inventory Basics

Shelby Willeby

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Agenda

- Intro
- Company and Facility Pages
- Emission Unit Page
- Release Point Page
- Control Device Page
- Unit Process Page
- Flares
- Process Emission Page

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What is an Emission Inventory?

- Detailed estimate of the amounts of regulated air pollutants released into the atmosphere
- Provides enough information to show:
  - Where and when emissions occurred
  - What processes produced emissions
  - Calculation methods for determining emissions

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Note on First Inventories

- If a facility is submitting an Emissions Inventory for the first time, SLEIS will have no information populated for emission units, processes, or emissions
  - See permit or permit application for a list of emission units and information about them. * This might not have all units though*

Point	Source
E-1	25-hp Kohler CH730S engine
E-2	203-hp Caterpillar 3306TA
	Produced Water Tank (s)
	Fugitive Emissions

- After the first inventory, most data are copied forward to the next year
  - Key exceptions: annual process rates, annual hours of operation, annual emission amounts

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Company and Facility Data

- Largely unchanged from year to year, with a few things to watch out for
  - Make sure the appropriate Responsible Official has been designated
    - Form #100-882 is used for Responsible Official changes

- Make sure all change of ownership paperwork has been submitted to the DEQ before preparing emissions inventories
  - Form #100-883 is used for ownership changes
  - The new owner assumes responsibility for reporting, paying fees, and compliance schedules, unless specifically written into the purchase agreement

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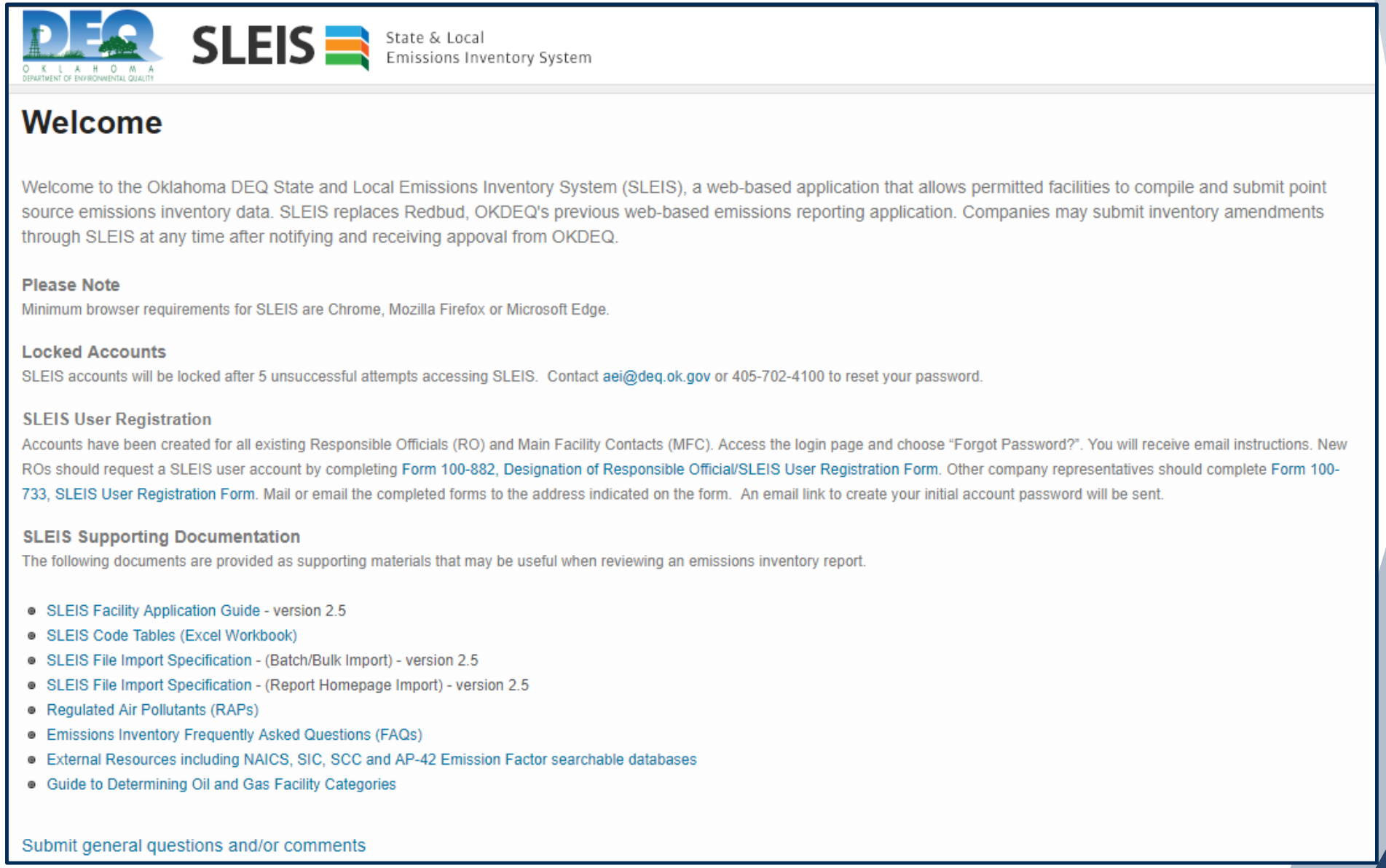
SLEIS Homepage



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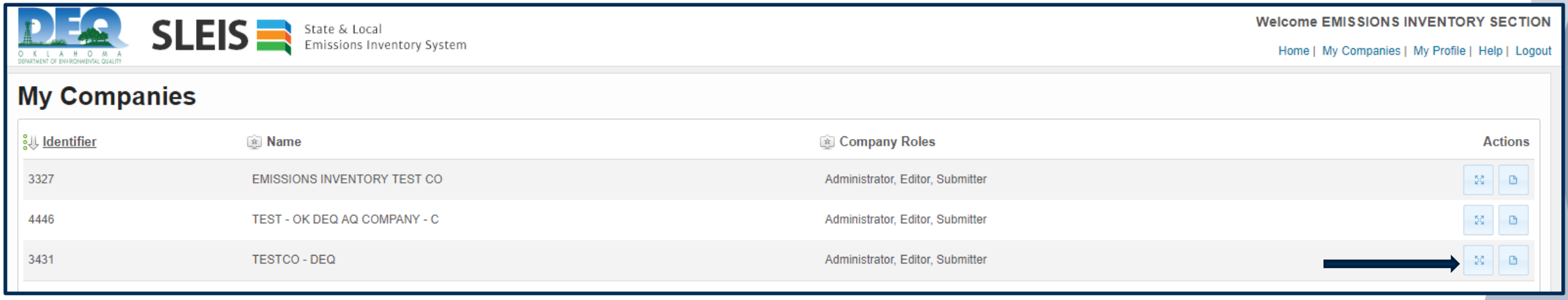
My Companies Page



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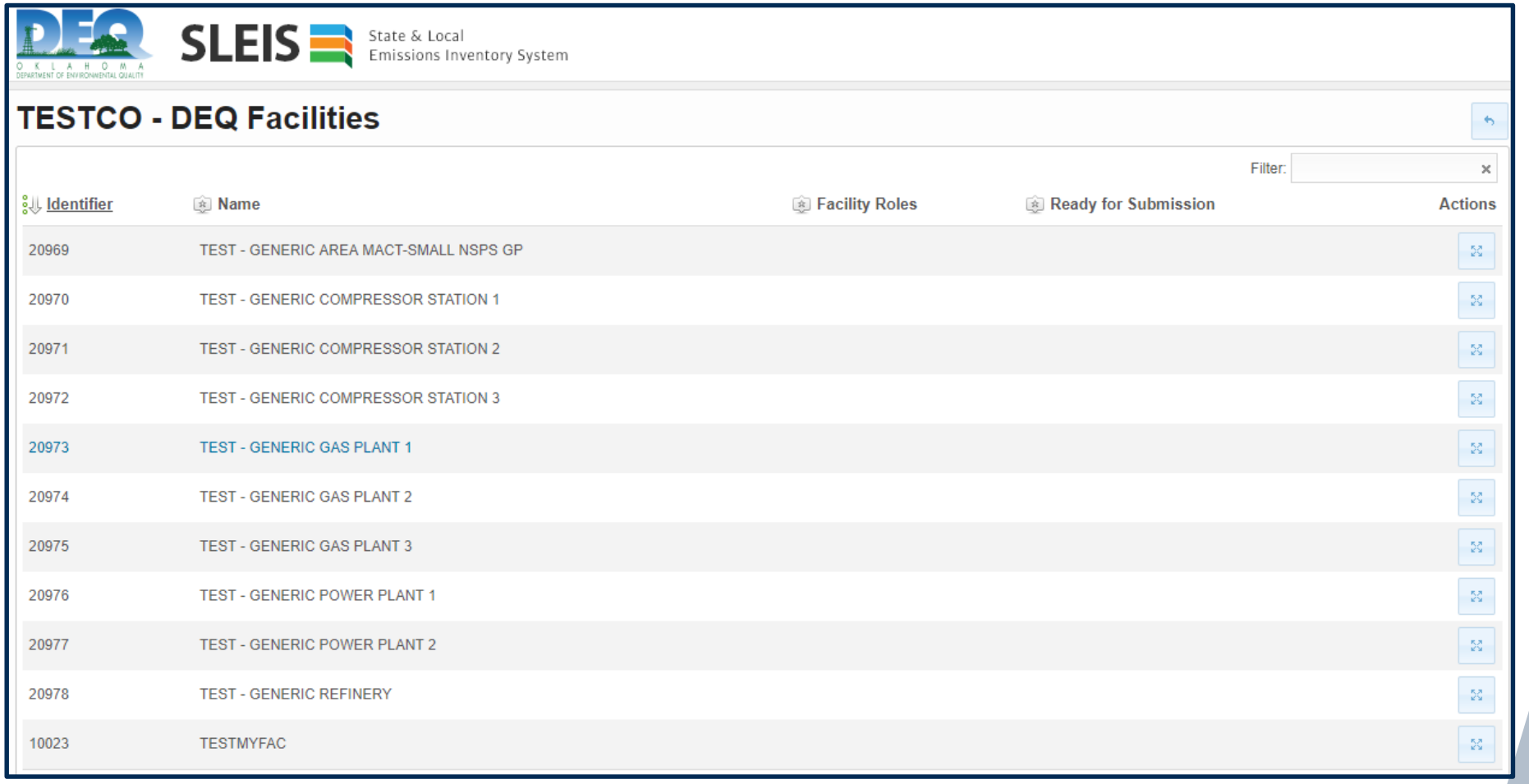
My Facilities Page



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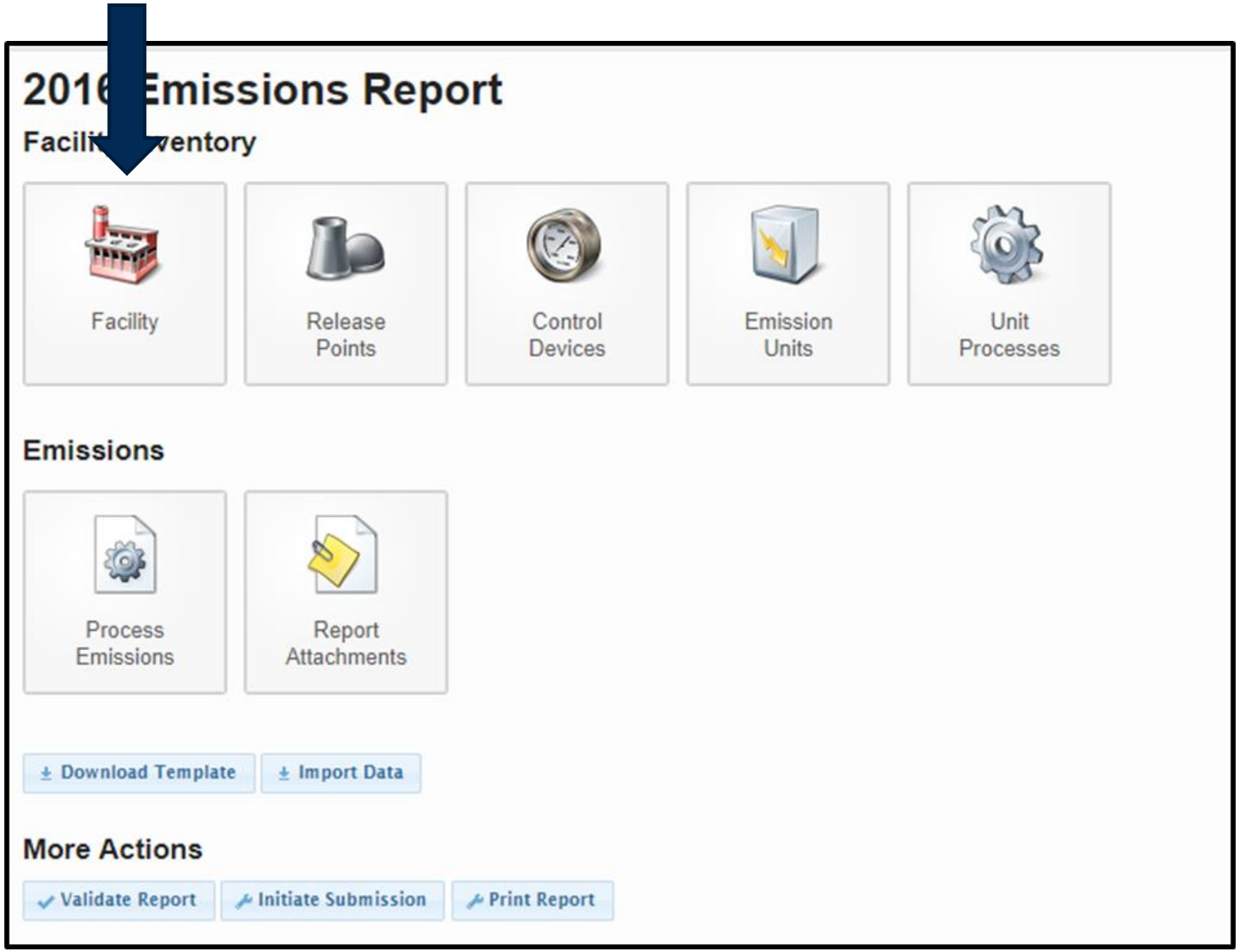
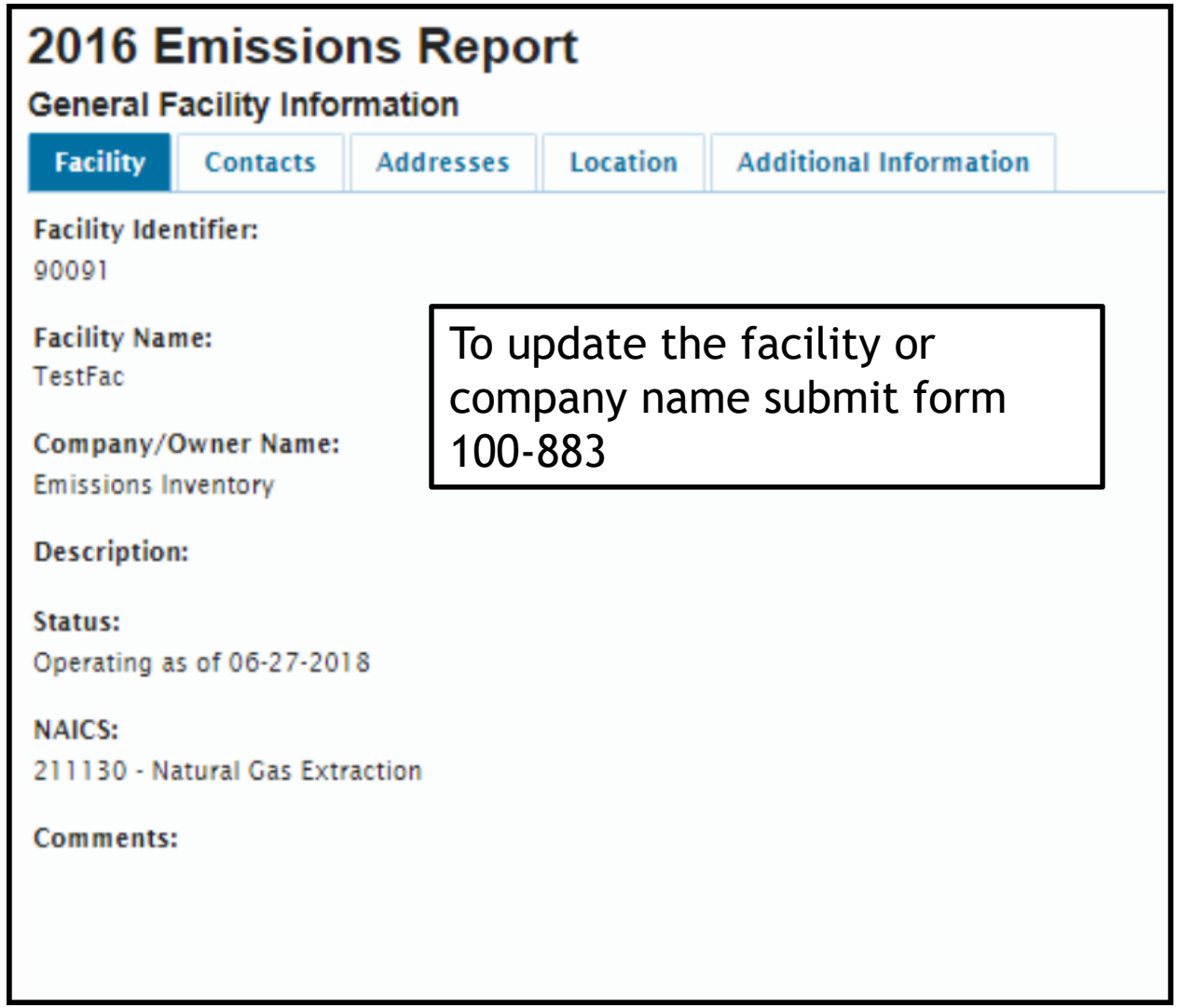
SLEIS Facility Home Page



Facility Tab



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Facility Address Tab

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Facility Location Tab

Latitude (decimal degrees):
35.822

Longitude (decimal degrees):
-96.745

UTM X (meters):
703710.232219

UTM Y (meters):
3966552.837496

UTM Zone:
14
Assumes northern hemisphere

Collection Method:
028 - GPS with unspecified parameters

Data Collection Date:
06-25-2018

Geographic Reference Point:
103 - Boundary point for a facility or System (Facility boundary points can be singular, or part of a series of boundary points)

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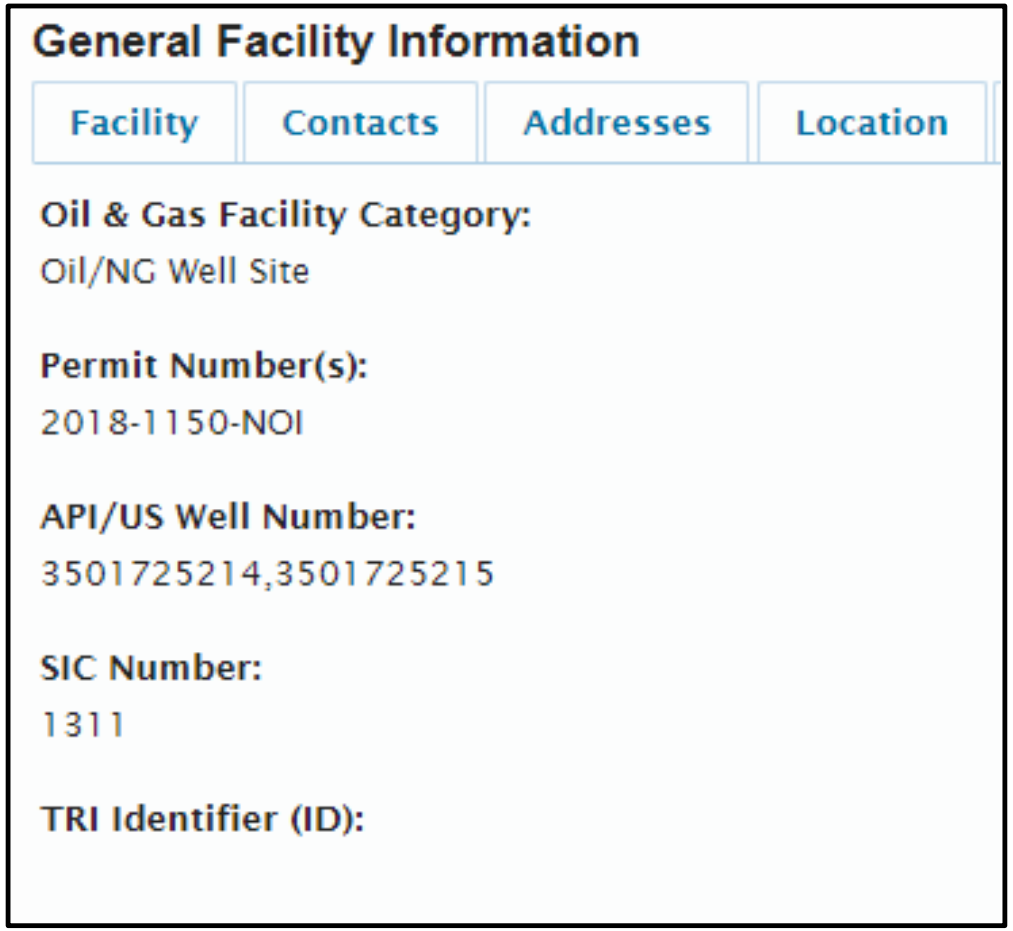
Facility Additional Information Tab



Oil and Gas Facility Category

- Oil/NG – Well Site
- Central Tank Battery
- Produced Water Injection Facility
- NG – Gathering Compressor Station
- NG – Treatment Without Compression
- NG Plant – Transmission Compressor Station
- NG – Underground Storage Facility
- Oil – Pipeline Breakout Facility/Truck Station
- Oil – Tank Farm
- Oil/NGL/Refined Petroleum – Pipeline Pump Station
- Oil Refinery
- Refined Petroleum – Product Terminal
- Oil/NG/NGL – Other

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Oil and Gas Facility Category

- A guide to classifying oil and gas facility categories can be found on our website and on the SLEIS homepage
  - https://www.deq.ok.gov/wp-content/uploads/air-division/EI_Oil_and_Gas_Facility_Categories_Guide.pdf
  - https://www.deq.ok.gov/wp-content/uploads/air-division/EI_Oil_and_Gas_Facility_Categories_Guide.pdf

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

API Number

- Please provide all API numbers for your facility. API numbers are very important for improving the accuracy of our oil and gas emission submittal to the National Emission Inventory

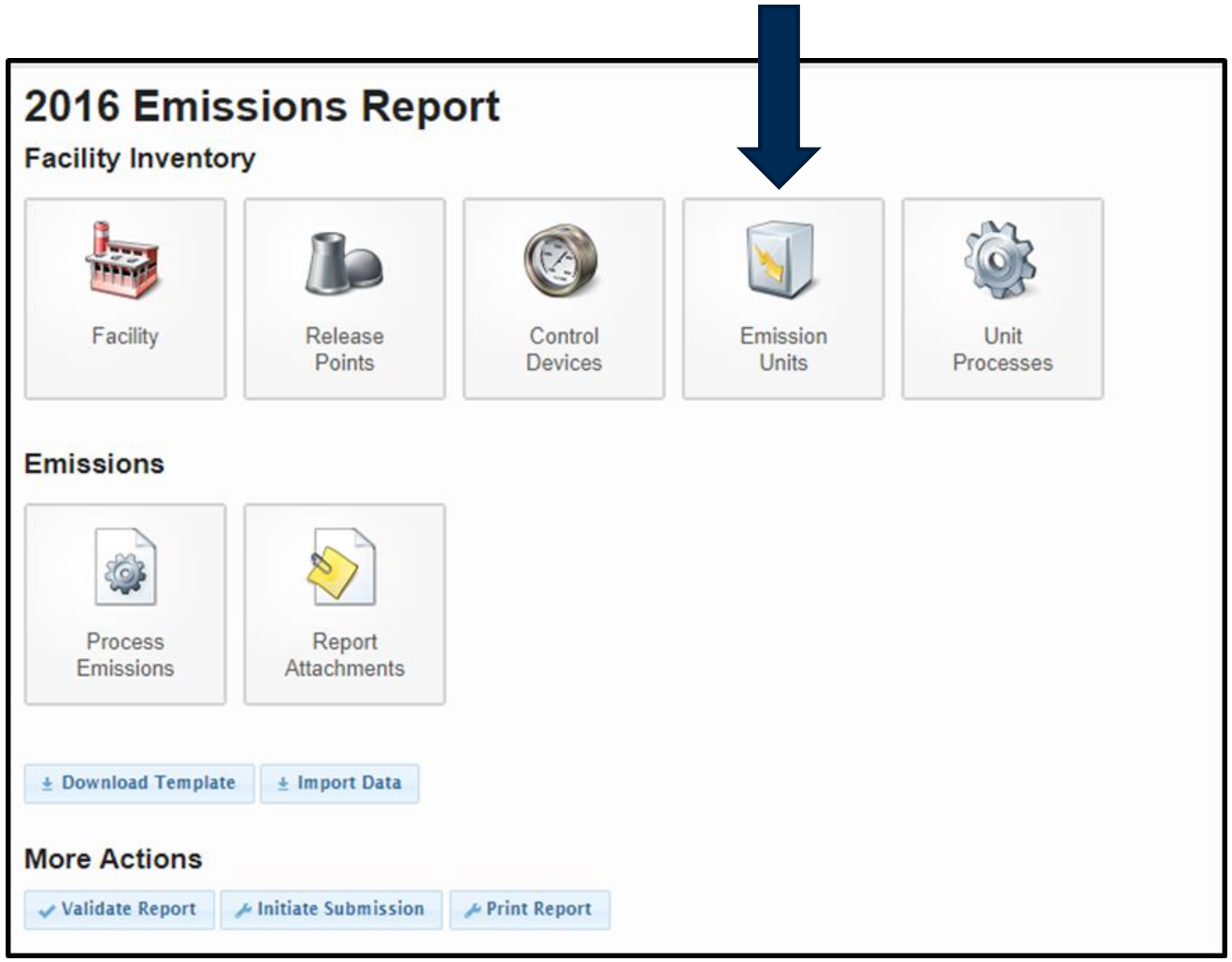
- All API numbers supplied by industry and many API numbers that we found on the OK Corporation Commission website are already loaded into SLEIS
  - Please review the API numbers already loaded into SLEIS

- To add new API numbers to SLEIS, please enter the API number as a string separated by commas with no spaces
  - For Example: 35XXXXXXXX,35XXXXXXXX

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Emission Unit

Emission Units



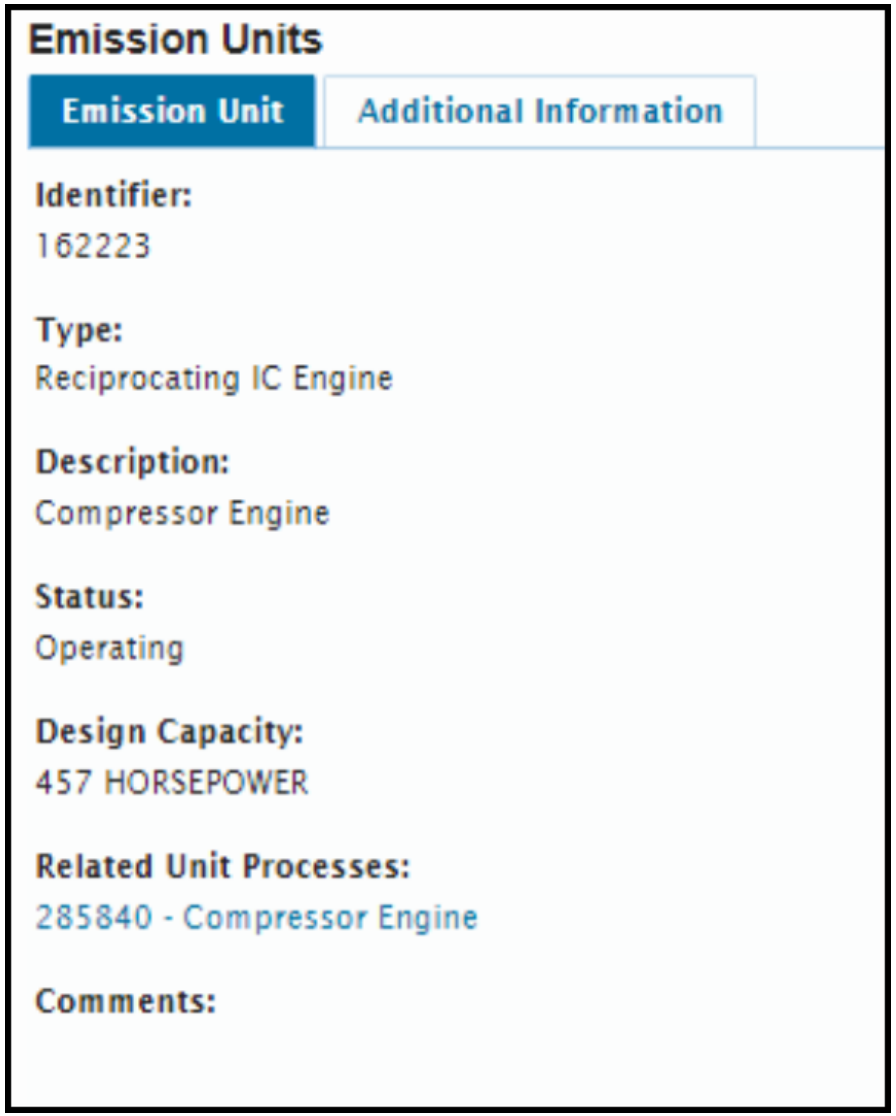
OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Emission Unit

- Physical object or group of objects that produces emissions
- Many Types
  - Engines, storage tanks, stock piles, paint booths, etc
- Each emission unit has one or more release points
- Report operating status for both the emission unit and the release point

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Emission Unit



Design Capacity

- Maximum output a machine, tool, or other component can achieve under ideal conditions with unlimited resources
- Engines, process heaters, and flares have design capacities

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Design Capacity

Redbud

- Design capacity was listed at the process level

SLEIS

- Design Capacity is listed at the emission unit level
- For instances where an emission unit had two or more processes that listed different design capacities in Redbud, no design capacity was loaded into SLEIS

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Grouping Emission Units

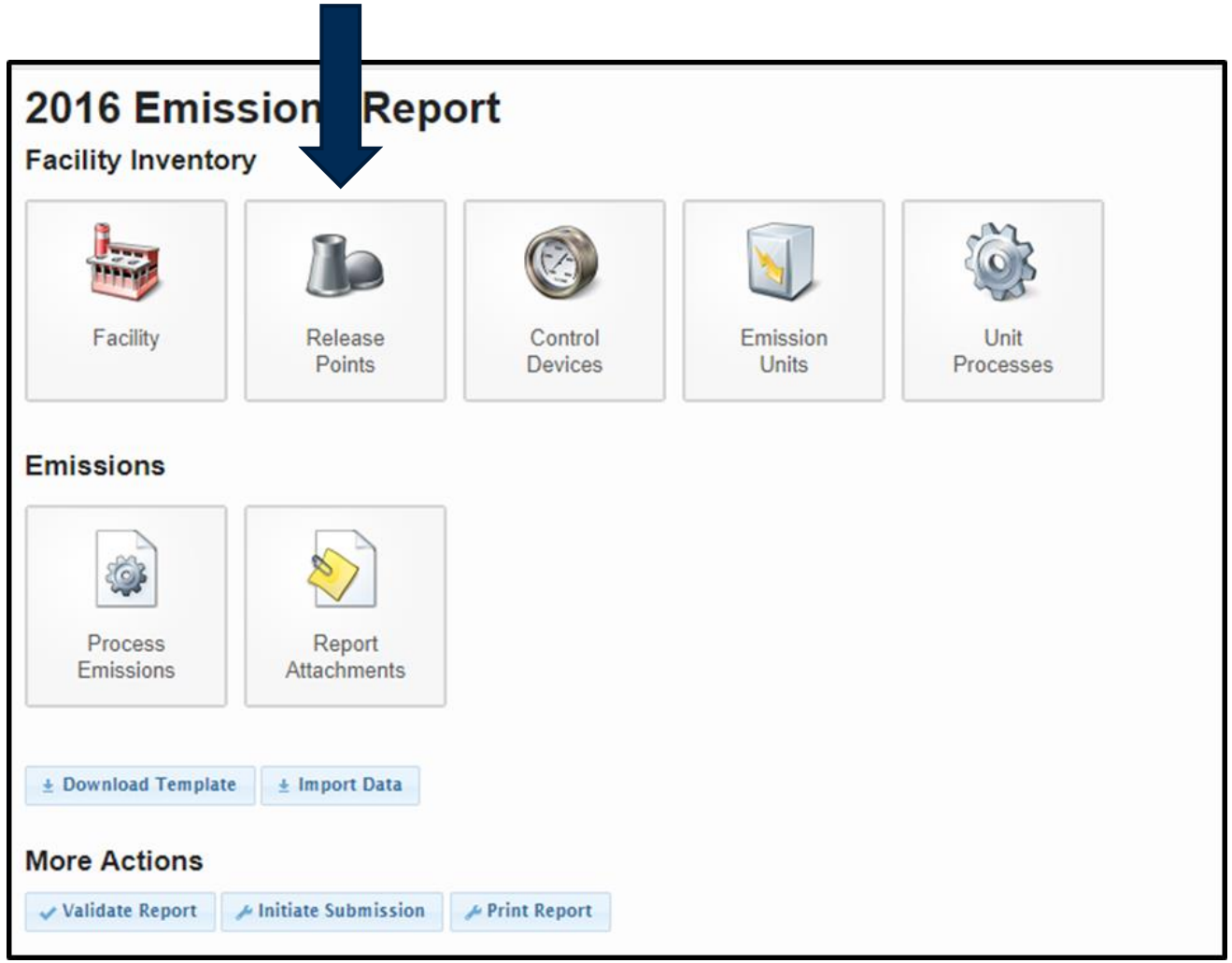
- Some small sources of emissions should be logically grouped into one source
  - An individual emission unit may not have emissions above the reporting threshold but a group of that emission unit type might
  - For example 20 similar process heaters at a facility could be logically grouped together

- How to report grouped emission units
  - Include number of units being grouped in the name
  - Fugitive release point includes total length and width of all units and the average height
  - Process rates, operating hours, and design capacity should be reported as an average
  - Actual emissions determined by actual process rates of each unit, not average emissions

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

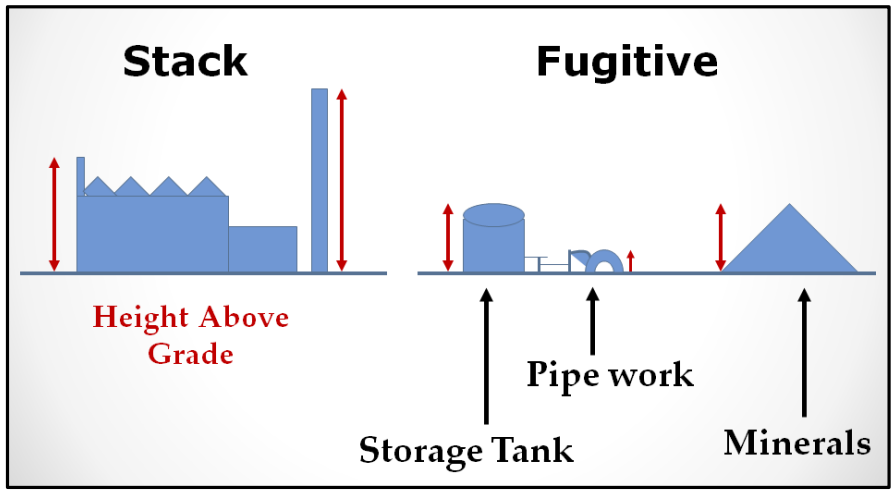
Release Point

Release Points



OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Release Point



- The point at which emissions are emitted to the atmosphere
- Can be either fugitive or stack
  - Stacks have a distinct point where emissions are emitted to the atmosphere
  - Fugitives are emitted over a wide area and do not have a distinct point where emissions are emitted
- Fugitive release point examples
  - Leaks from pressurized equipment
  - Stockpiles
  - Material handling that cannot be easily funneled into a stack or control device

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Release Points

Redbud

- Release points were listed at each emission unit record
- A release point could only be associated with one emission unit

SLEIS

- Release Points are listed separately from the emission unit. At the unit process page the release point is associated with the appropriate process
- The same release point can be associated with multiple emission units and processes

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Fugitive Release Point Fields

- Fugitive Length
  - The length of the fugitive release in the North-South direction
- Fugitive Height
  - The fugitive release height above ground level
- Fugitive Width
  - The width of the fugitive release in the East-West direction
- Fugitive Angle
  - The orientation angle for the area in degrees from North, measured positive in the clockwise direction. Should be between 0 and 179 inclusive

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Release Points

Release Points

Release Point | Location | Additional Information

Identifier:
161616

Type:
Vertical

Description:
Compressor Engine Stack

Status:
Operating

Stack Height:
21.0 FEET

Stack Shape:
Circular

Stack Diameter:
1.00 FEET

Exit Gas Temp:
950 °F

Exit Gas Flow Rate:
1802 ACTUAL CUBIC FEET PER MINUTE

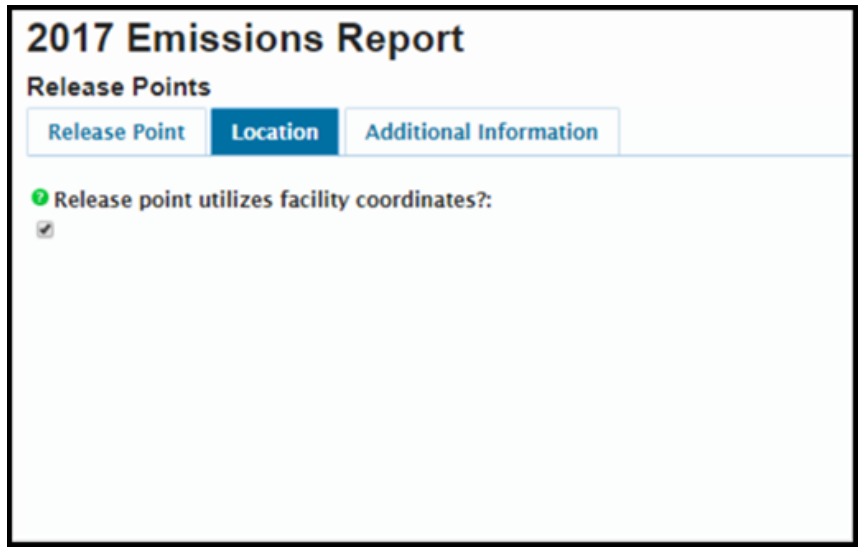
Exit Gas Velocity:
38.24 FEET PER SECOND

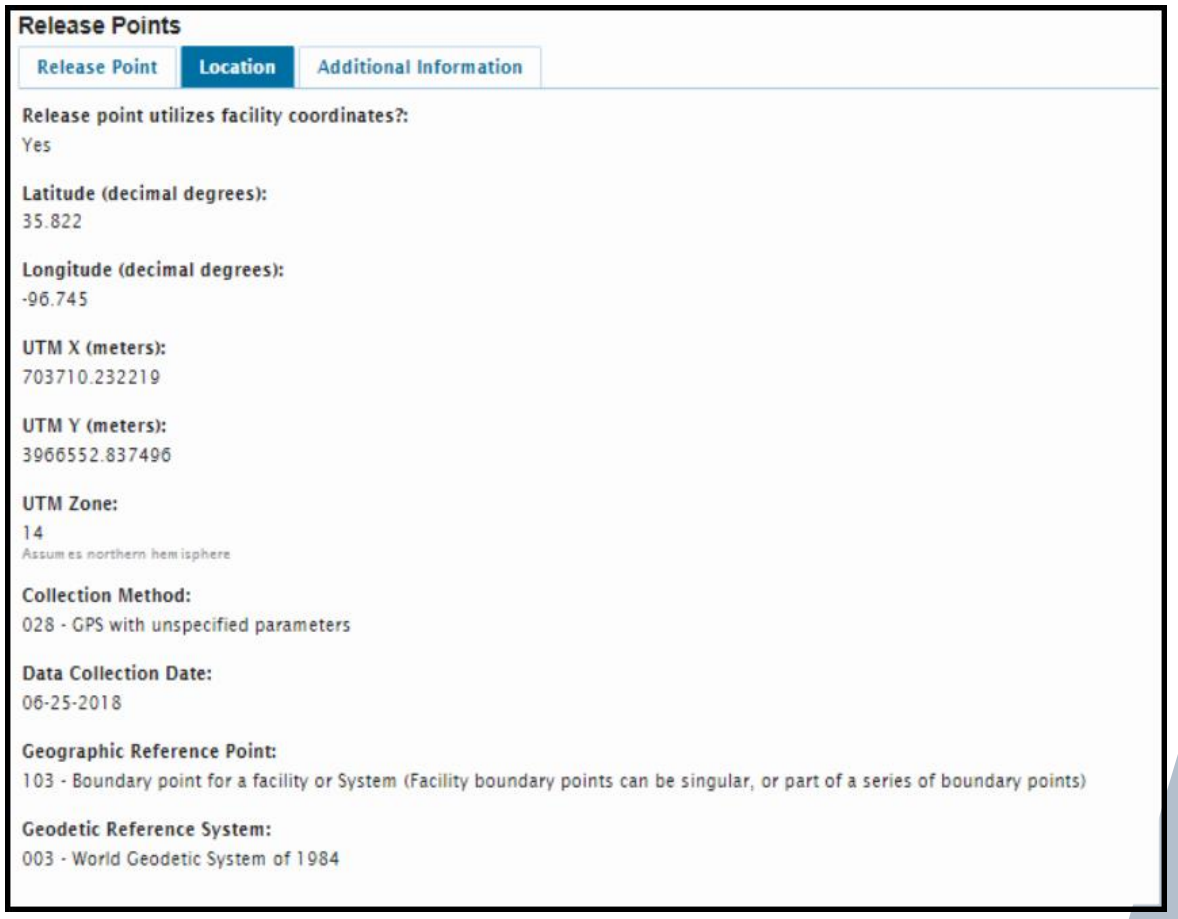
Related Unit Processes:
162223 - Compressor Engine , 285840 - Compressor Engine

Comments:

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Release Point Location Tab

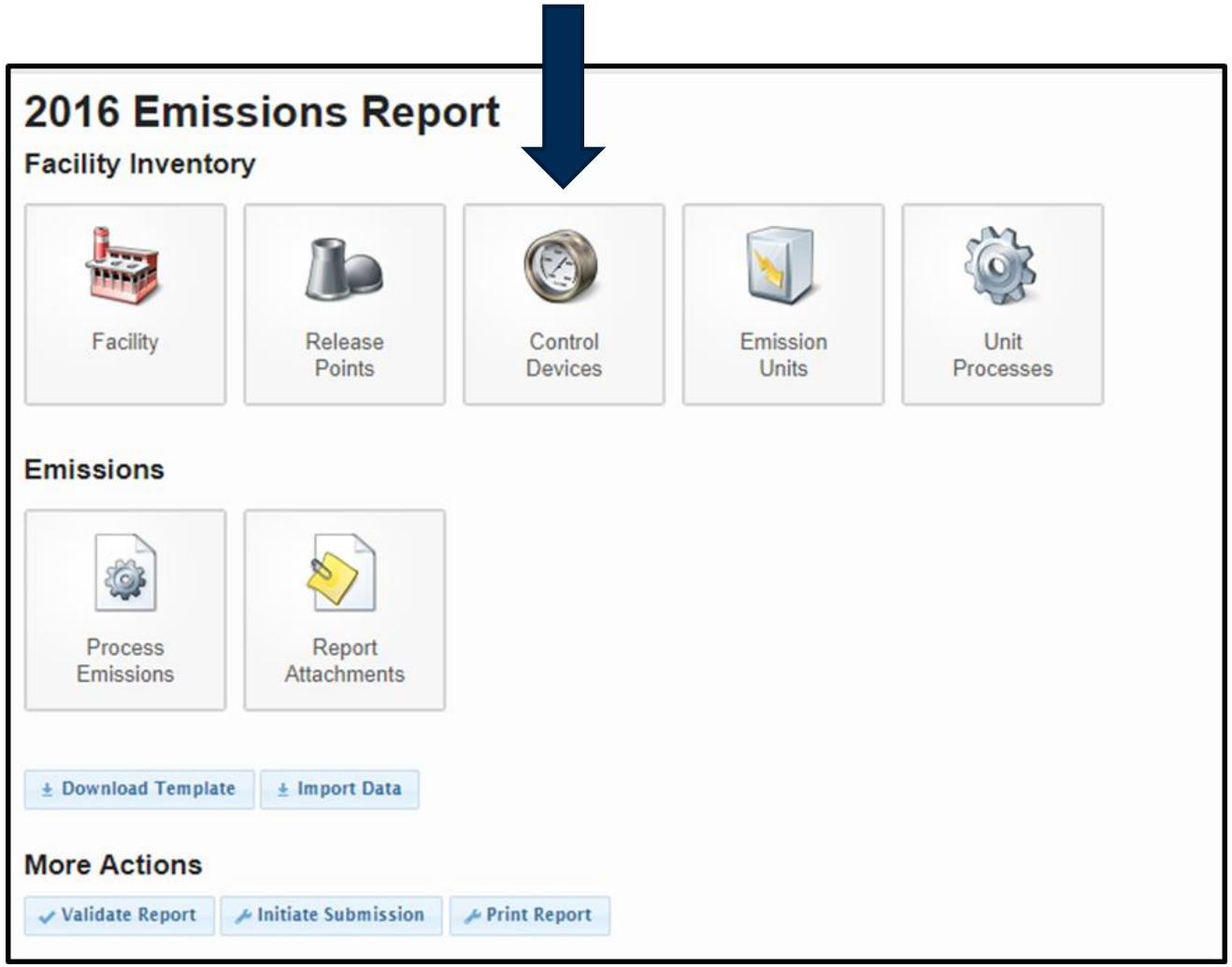




OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Control Device

Control Devices



Control Device Definitions

- Control Device/Scenario
  - The control system, abatement equipment, or approach applied to reduce emissions of the pollutant
- Capture Efficiency
  - The percentage of air emission that is directed to the control equipment
- Control Efficiency
  - The percentage by which a control device or technique reduces the emissions from a stationary source

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Control Device

Control Devices

Control Device | Additional Information

Identifier:
151429

Description:
Condenser Primary 100 80

Status:
Temporarily Shutdown as of 01-01-2019

Control Measure:
Condenser

Controlled Pollutants:
100414 (Ethylbenzene): 80.00%
108883 (Toluene): 80.00%
110543 (Hexane): 80.00%
1330207 (Xylenes (mixed isomers)): 80.00%
71432 (Benzene): 80.00%
VOC (Total VOC): 80.00%

Related Unit Processes:
185130 - Glycol Dehydrator Reboiler and Still Vent, 311154 - Natural Gas Production - Glycol Dehydrator Reboiler Still Stack

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Changes to Control Devices

Redbud

- Control Devices were listed at each emission record

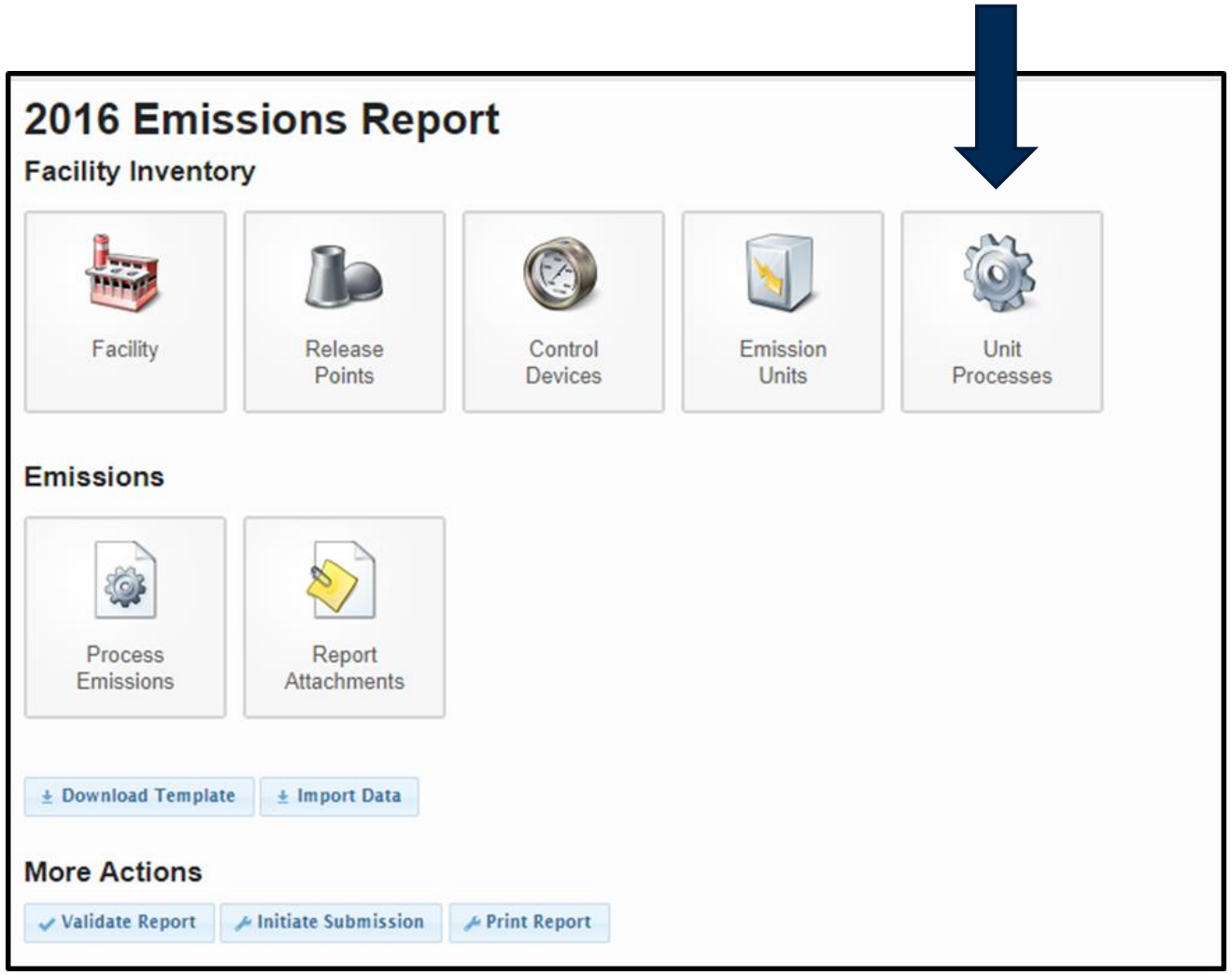
SLEIS

- Control Devices are listed separately from the process and emissions
- At the Unit Process page the control device is associated with the appropriate process
- The same control device can be associated with multiple processes

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

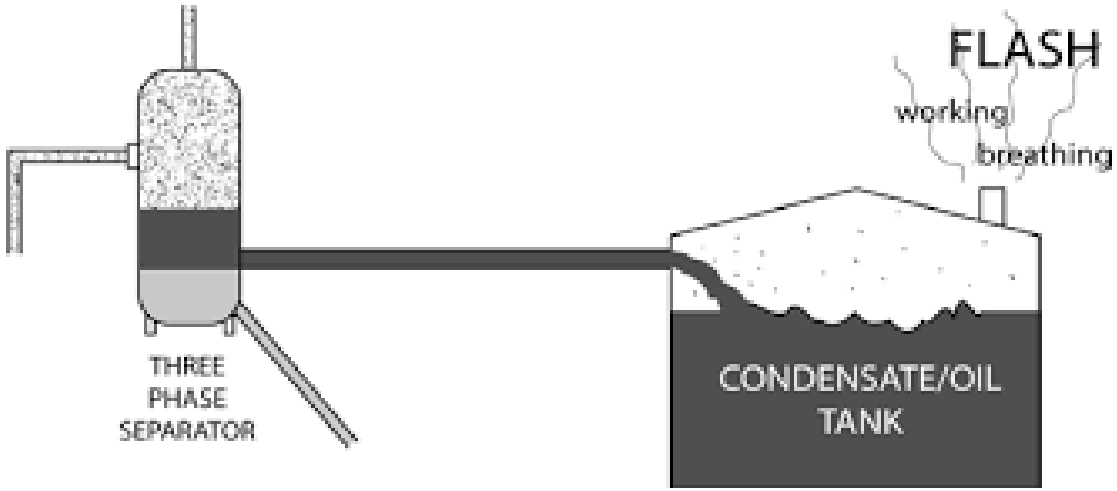
Unit Processes

Unit Process



Emission Process

- Activity at an emission unit that produces emission
- Associated with a specific Source Classification Code (SCC)
- An emission unit can have multiple emission processes
  - An engine can have two processes if it burns both natural gas and diesel
  - Storage Tanks can have three processes working, breathing, and flashing losses



Reporting Fixed Roof Tanks

- Grouping Fixed-Roof Tanks
  - A group of fixed-roof tanks that share a common header can be reported as a single emission unit if the combined total of emissions is less than or equal to 6 tons
  - If the combined total of emissions for the group of tanks is greater than 6 tons, the tanks must be reported separately
- Reporting Fixed Roof Tanks
  - If emissions from the tank or group of tanks is greater than 6 tons then separate processes for working, breathing, and flashing losses need to be reported
  - If emissions from the tank or group of tanks is less than 6 tons then only one process using the combined source classification code for working, breathing, and flashing losses need be reported

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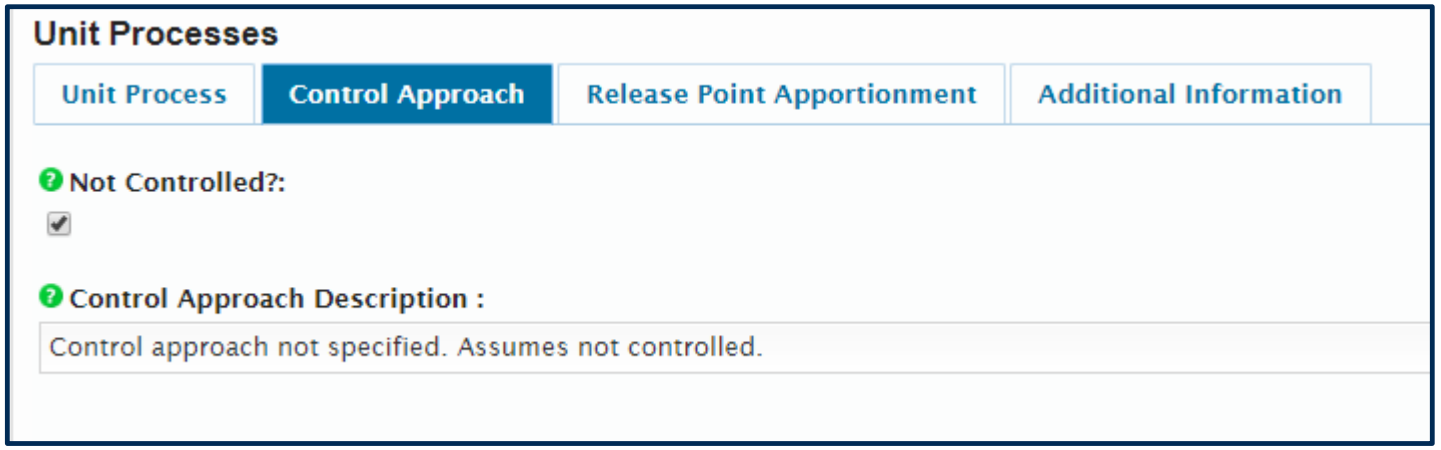
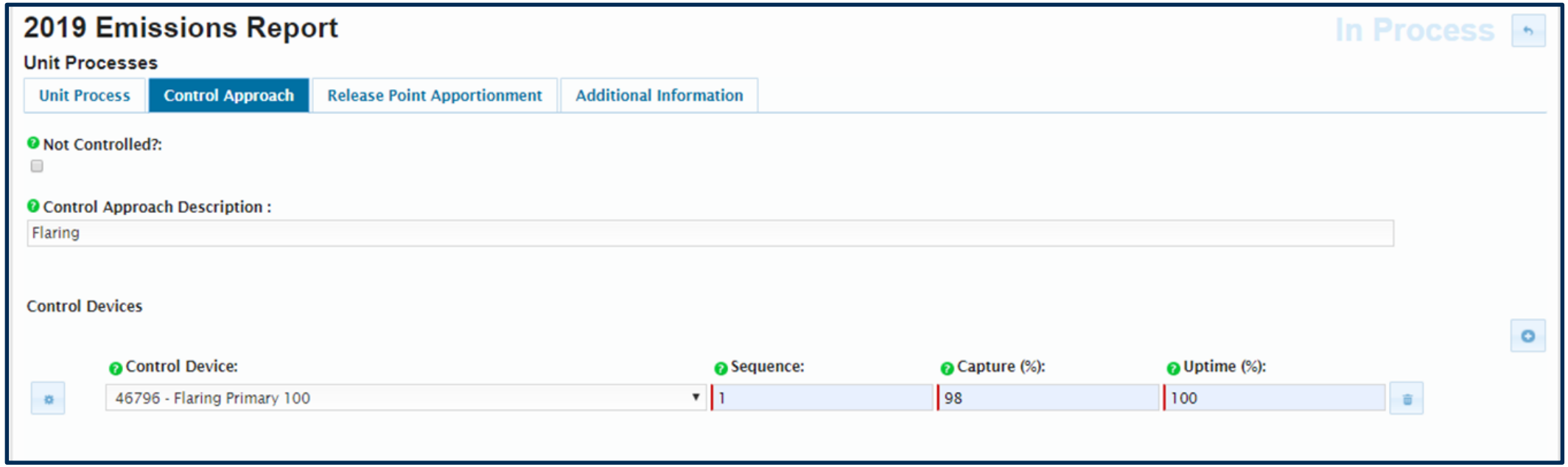
Unit Process

Unit Process Control Approach Tab



Unit Process Control Approach Tab



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New Fields

- Sequence
  - Indicates the order by which control devices will be used to calculate overall control efficiency. Different control devices with identical sequence numbers will be processed in parallel. Different sequence values will be processed sequentially
- Uptime Percentage
  - An estimate of the percentage of the reporting year that the overall control system was operating as designed
- Release Point Apportionment
  - The average annual percent of an emissions process that is vented through a release point

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Capture Efficiency

Redbud

- The capture efficiency was listed at each emission record
- The capture efficiency could be different at each emission record

SLEIS

- The capture efficiency is listed an the Unit Process Control Approach page
- The capture efficiency is the same for all pollutants associated with a control device

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Control Efficiency

Redbud

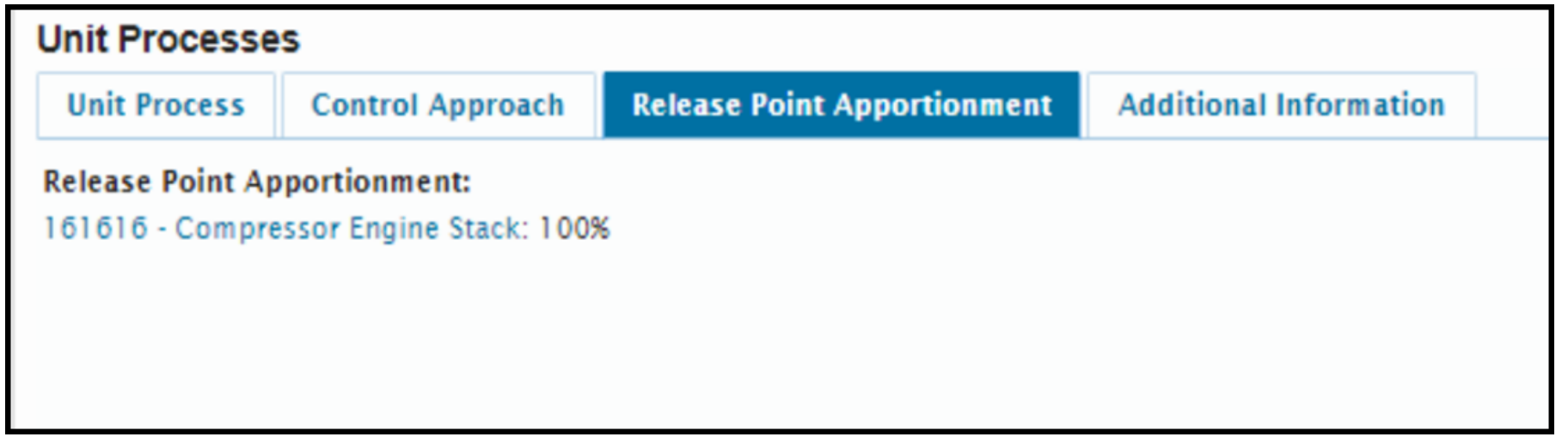
- The control efficiency was listed at each emission record

SLEIS

- The control efficiency for all pollutants are listed at the control device
- The control device is then associated to the process
- One control device may be associated to multiple processes

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Unit Process Release Point Apportionment

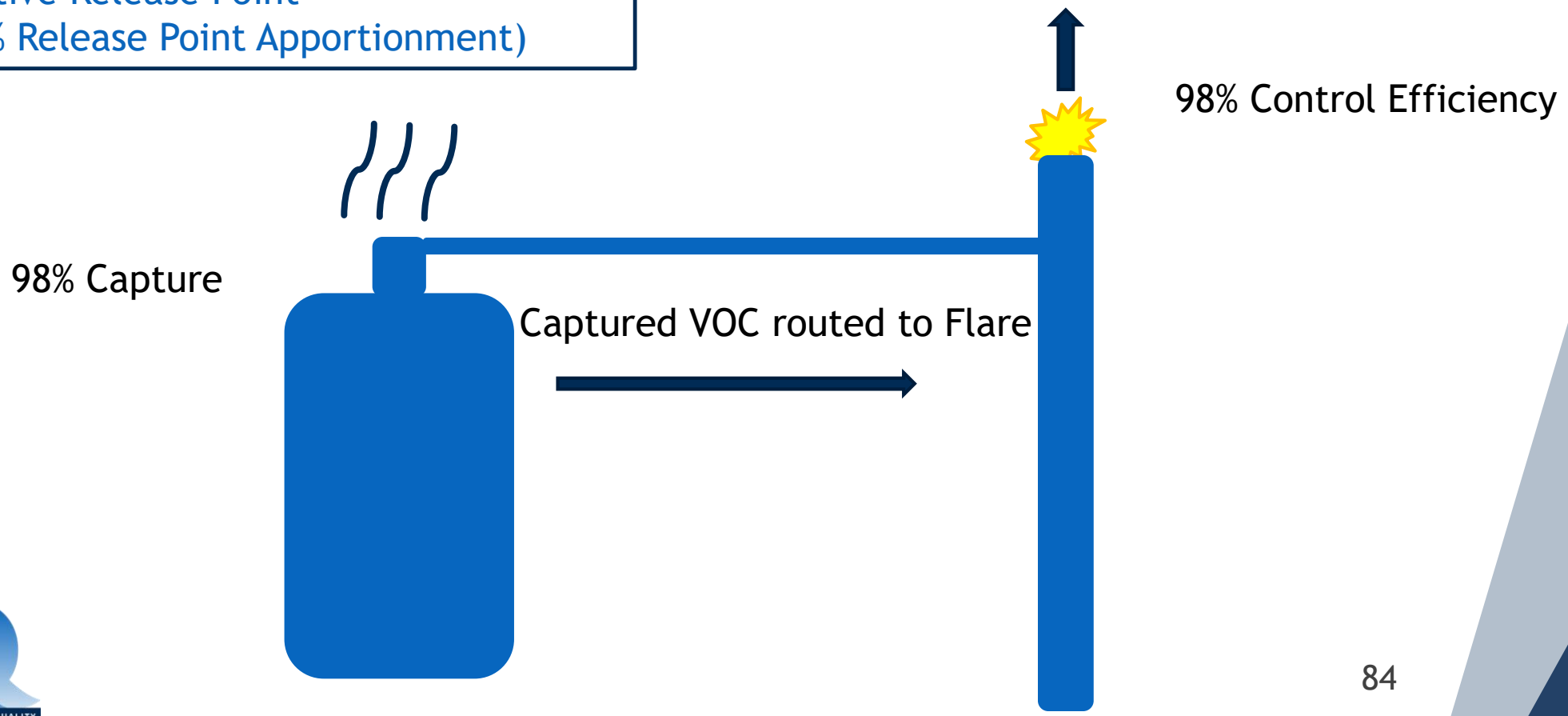


Flares

Tank-Flare System

- Fugitive uncaptured VOC
  - Reported as one process for fugitive VOC
- Tank Fugitive Release Point
  - (100% Release Point Apportionment)

- Un-combusted VOC,combustion emissions, and pilot light emissions
  - Reported as one or two processes
- Vertical Release point
  - (100% Release Point Apportionment)



Flare Unit Process – One Process

- Report one process
  - This process represents NOx and CO emissions due to combustion of the captured gas stream, un-combusted VOC emissions, and pilot light NOx, CO, and VOC emissions
  - Instead of using the actual throughput that enters the flare over the reporting year, multiply the maximum flare design capacity by the hours of operation to get the yearly throughput for the flare
    - This is a conservative estimate so pilot light emissions are assumed to be accounted for and do not need to be calculated and reported under a different process
  - The NOx and CO emissions are accounted for using either AP-42 or TCEQ emission factors and multiplying by the maximum annual heat input
  - Un-combusted VOC emissions can be estimated by taking a percentage (2% if the flare combustion destruction efficiency is 98%) of the captured emissions from the emission units that route to the flare

Flare Unit Process – 2 Processes

- One process for NOX, CO, and VOC combustion emissions associated with the pilot light
- The other process is for un-combusted VOC emissions and NOx and CO emissions associated with the combustion of the gas stream
- The NOx and CO emissions are accounted for using either AP-42 or TCEQ emission factors and multiplying by the maximum annual heat input
- Un-combusted VOC emissions can be estimated by taking a percentage (2% if the flare combustion destruction efficiency is 98%) of the captured emissions from the emission units that route to the flare

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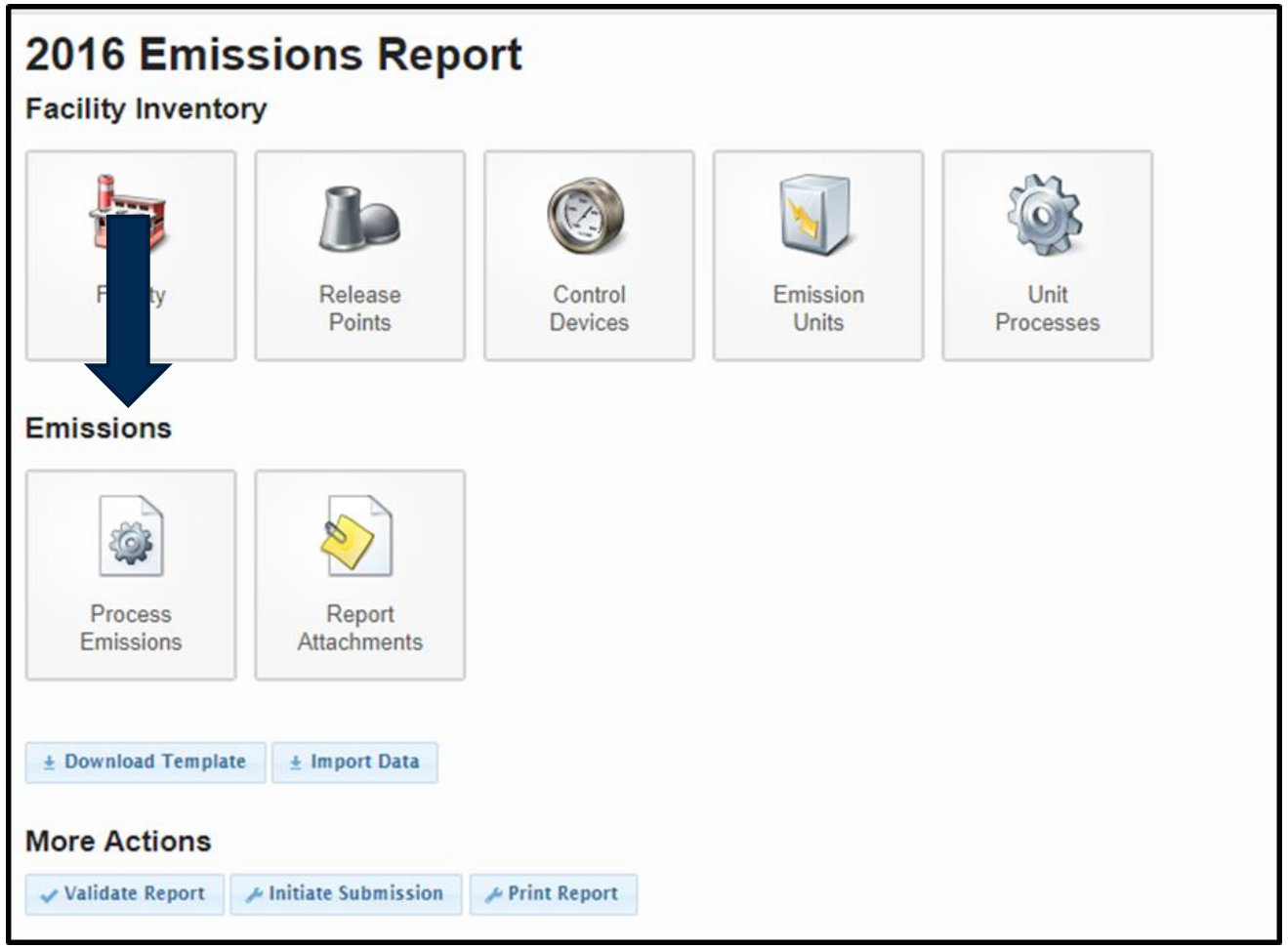
Process Emissions

Process Emissions

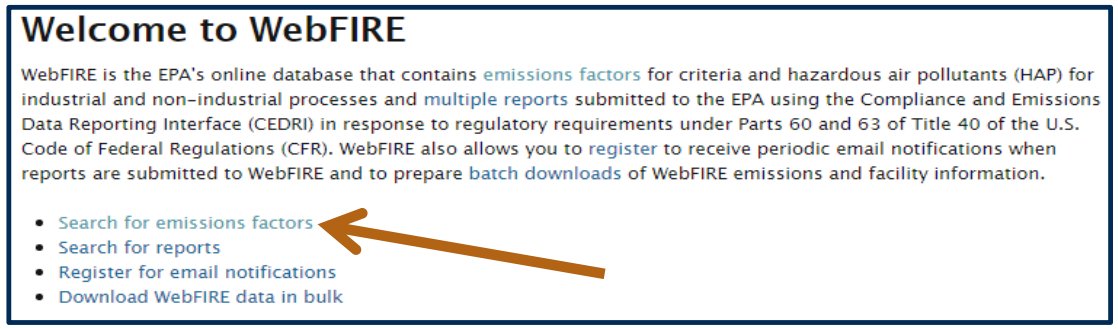


What Pollutants Need to be Reported

- Permit

Parameter	*Natural Gas*			*#2 Fuel Oil*		
	Factor	Emissions		Factor	Emissions	
	lb/MMBtu	Lb/hr	TPY	Lb/MMBtu	Lb/hr	TPY
NO_X	0.035	0.72	3.16	0.190	3.78	16.55
CO	0.037	0.75	3.28	0.070	1.43	5.26
VOC	0.018	0.33	1.43	0.030	0.61	2.88
SO_2	0.001	0.02	0.08	0.515	10.51	46.00
PM	0.010	0.20	0.89	0.024	0.49	2.15

- List of Regulated Air Pollutants
  - https://www.deq.ok.gov/air-quality-division/emissions-inventory/oklahoma-regulated-air-pollutants/
- EPA Webfire Database
  - https://cfpub.epa.gov/webfire/



OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Process Emissions

Process | Operations | Emissions

Process Identifier:
311151 - Natural Gas - 4-cycle Lean Burn

Emission Unit Identifier:
185127 - Compressor Engine NO 391 - Caterpillar 3516BLE, 1380 hp

SCC:
20200254
Internal Combustion Engines-Industrial-Natural Gas-4-cycle Lean Burn

Process is Reported?:
No

Throughput:

Throughput Unit of Measure:

Throughput Type:

Throughput Material:

Process is CBI?:
No

Supplemental Calculation Parameters:

% Ash	% Sulfur	% Moisture	% Silt	Mean Vehicle Speed	Mean Vehicle Weight
Precipitation days	Silt Loading	% VOC	Density (lbs/unit)	Heat Content (MMBTU/Unit)	% Initial Yeast
Yeast Hours	% Final Yeast	Spiking Time	Horiz. Area	Wind Speed (mph)	Drop Height (ft)
Sulfur Content (gr/100 ft3)	% Carbon	% Chlorine in fuel	Molar Calcium/Sulfur ratio		

Comments:
none

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Supplemental Calculation Parameters

- Fuel Heat
  - The heat content of fuel, which is the amount of heat released during combustion

- % Ash, % Sulfur, % Moisture, % Silt, Mean Vehicle Speed, Mean Vehicle Weight, Precipitation Days, Silt Loading, % VOC, Density, % Initial Yeast, Yeast Hours, % Final Yeast, Spiking Time, Horiz. Area, Wind Speed, Drop Height,Sulfur Content, % Carbon, % Chlorine, Molar Calcium/Sulfur Ratio

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Fuel Heat Content

Redbud

- Fuel heat content was listed at the process level.
- The options for units included HP, MW, and MMBTU/HR

SLEIS

- Fuel heat content is listed with the supplement calculation parameters on the process emissions page
- The fuel heat content units can not be chosen and are assumed to be the units of the MMBTU/throughput.

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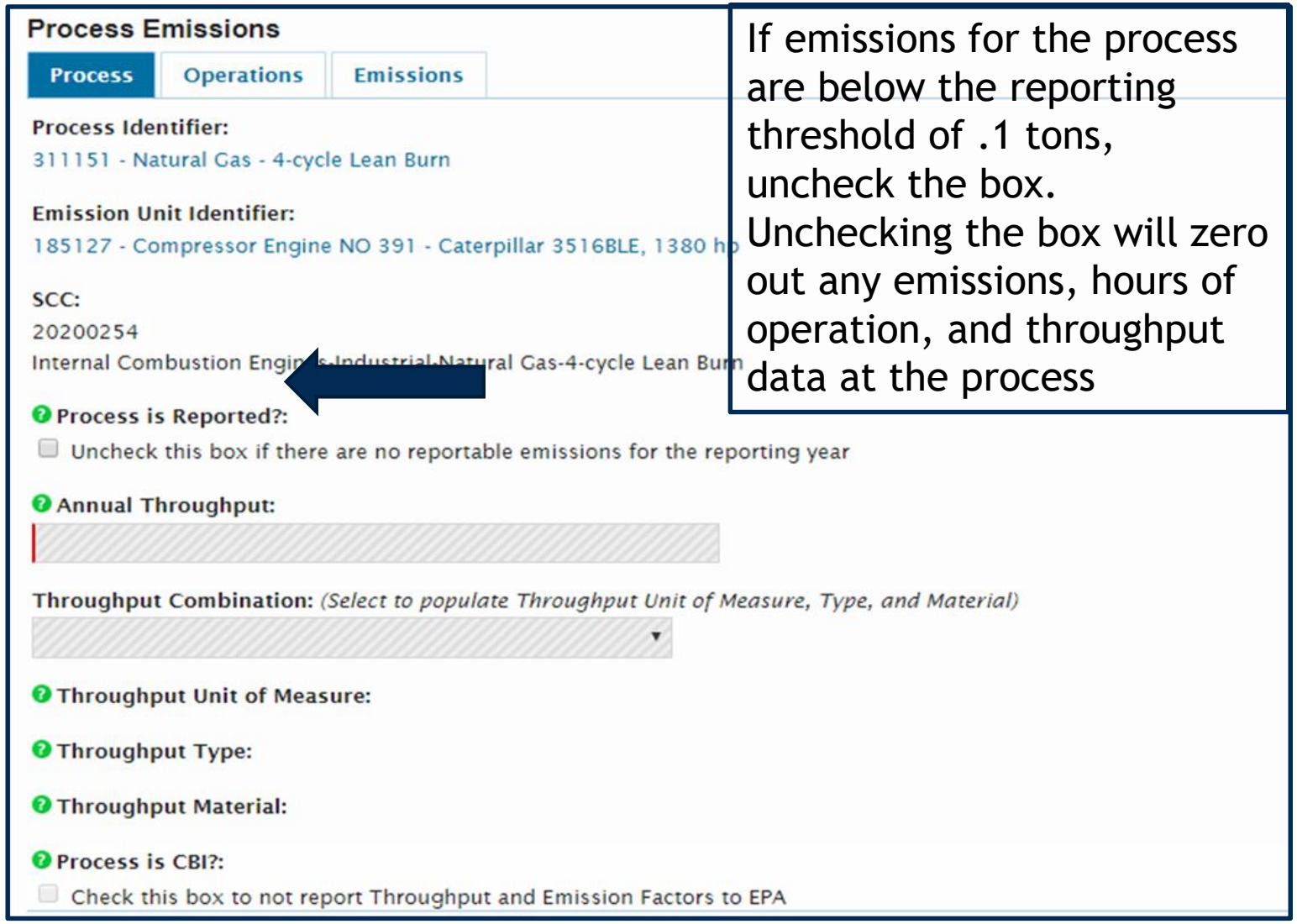
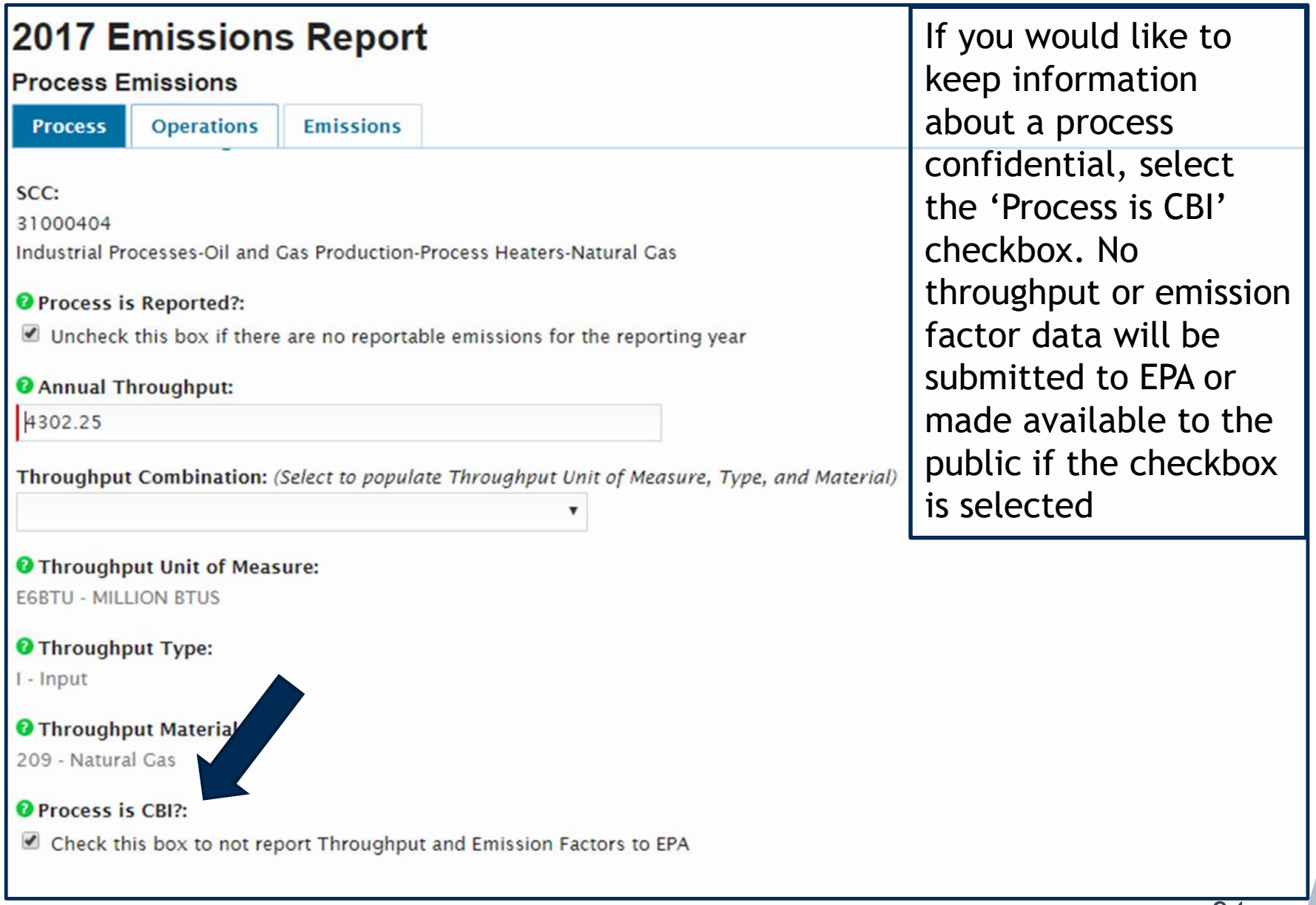
Reporting Threshold



If emissions for the process are below the reporting threshold of .1 tons, uncheck the box. Unchecking the box will zero out any emissions, hours of operation, and throughput data at the process

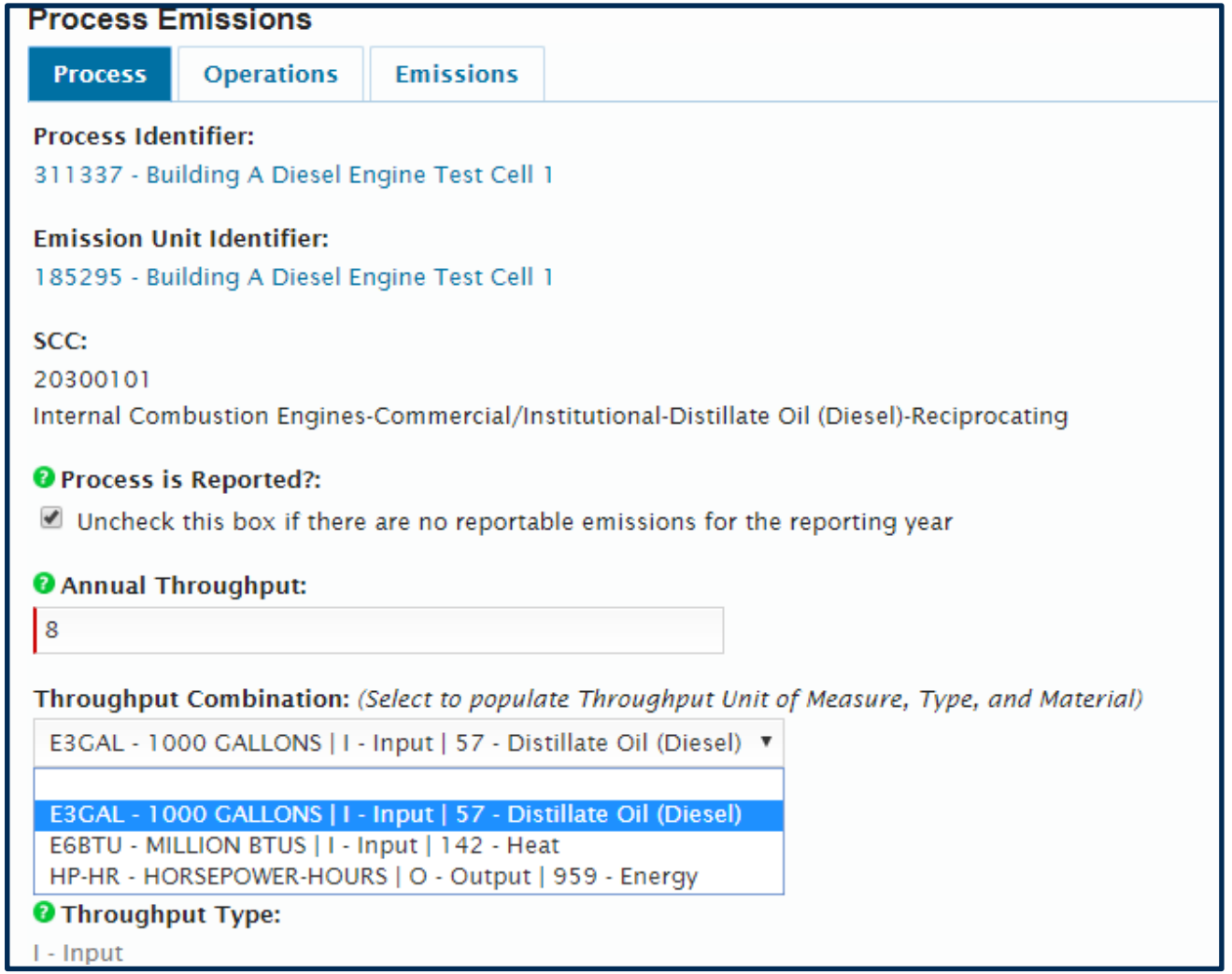
OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Confidential Business Information

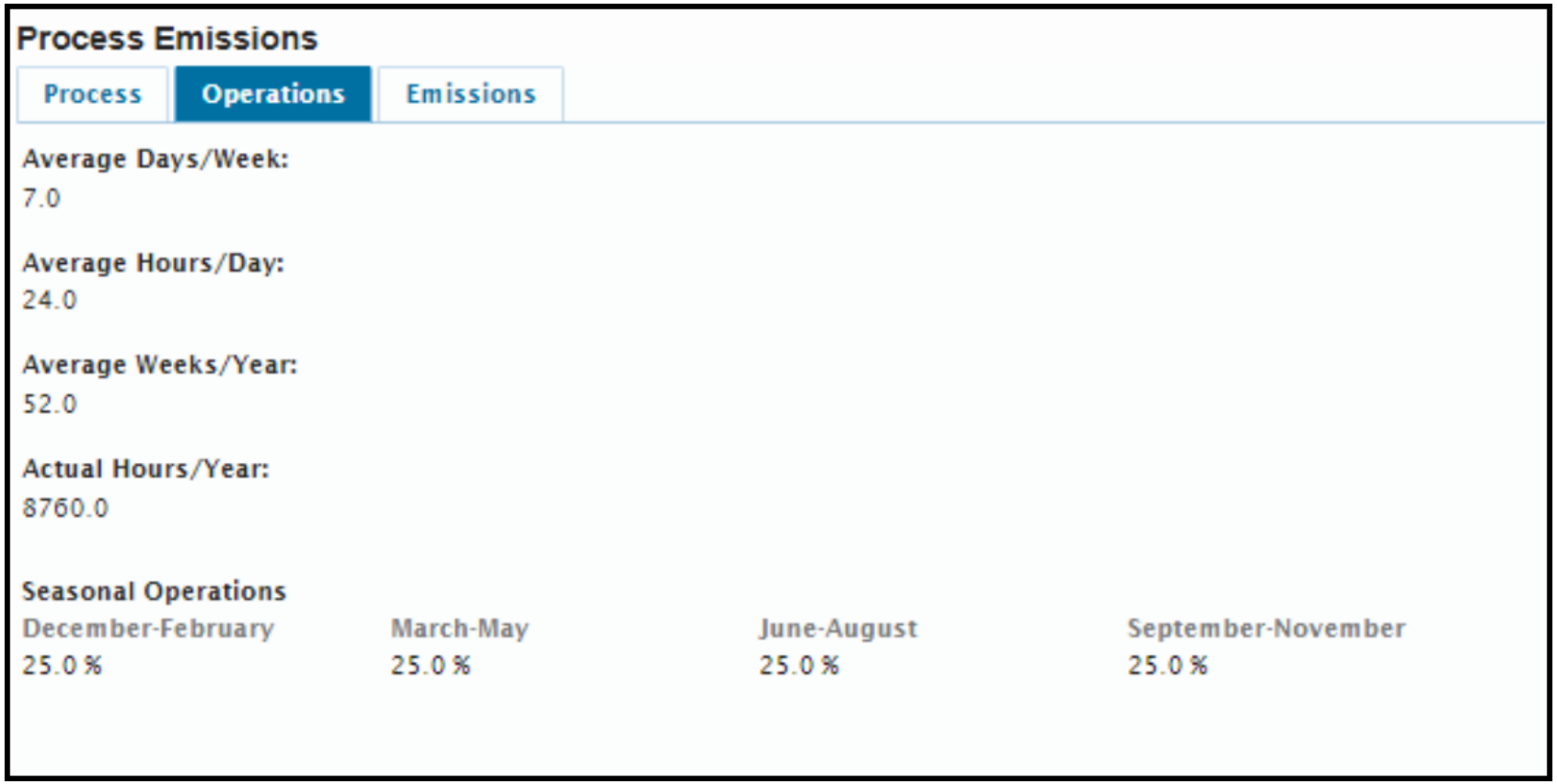


If you would like to keep information about a process confidential, select the 'Process is CBI' checkbox. No throughput or emission factor data will be submitted to EPA or made available to the public if the checkbox is selected

Throughput


Process Emissions
Process
Operations
Emissions
Process Identifier:
311337 - Building A Diesel Engine Test Cell 1
Emission Unit Identifier:
185295 - Building A Diesel Engine Test Cell 1
SCC:
20300101
Internal Combustion Engines-Commercial/Institutional-Distillate Oil (Diesel)-Reciprocating
Process is Reported?:
Uncheck this box if there are no reportable emissions for the reporting year
Annual Throughput:
8
Throughput Combination: (Select to populate Throughput Unit of Measure, Type, and Material)
E3GAL - 1000 GALLONS | I - Input | 57 - Distillate Oil (Diesel)
E3GAL - 1000 GALLONS | I - Input | 57 - Distillate Oil (Diesel)
E6BTU - MILLION BTUS | I - Input | 142 - Heat
HP-HR - HORSEPOWER-HOURS | O - Output | 959 - Energy
Throughput Type:
I - Input

Hours of Operation



Process Emissions

Process | **Operations** | Emissions

Average Days/Week:
7.0

Average Hours/Day:
24.0

Average Weeks/Year:
52.0

Actual Hours/Year:
8760.0

Seasonal Operations

December-February	March-May	June-August	September-November
25.0 %	25.0 %	25.0 %	25.0 %

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Calculating Emissions

Emission Factor

- An emission factor is a representative value that attempts to relate the quantity of a pollutant release with an activity associated with the release of that pollutant

- SLEIS has 3 subtypes emission factor
  - No Control Emission factor
  - Pre-Control Emission Factor
  - Post Control Emission Factor

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Calculation Methods with Emission Factors

- Industry Publication
  - No EF, No Control EF, pre-Control EF, post-Control EF
- Mass Balance
  - No EF, pre-Control EF, post-Control EF
- Manufacturer Test Data With OK DEQ Approval
  - No Control EF, pre-Control EF, post-Control EF
- Stack Test – US EPA Reference Method
  - No Control EF, pre-Control EF, post-Control EF
- US EPA Documents incl. AP-42 & Webfire
  - No EF, No Control EF, pre-Control EF, post-Control EF
- OK DEQ Approved Method
  - No EF, No Control EF, pre-Control EF, post-Control EF

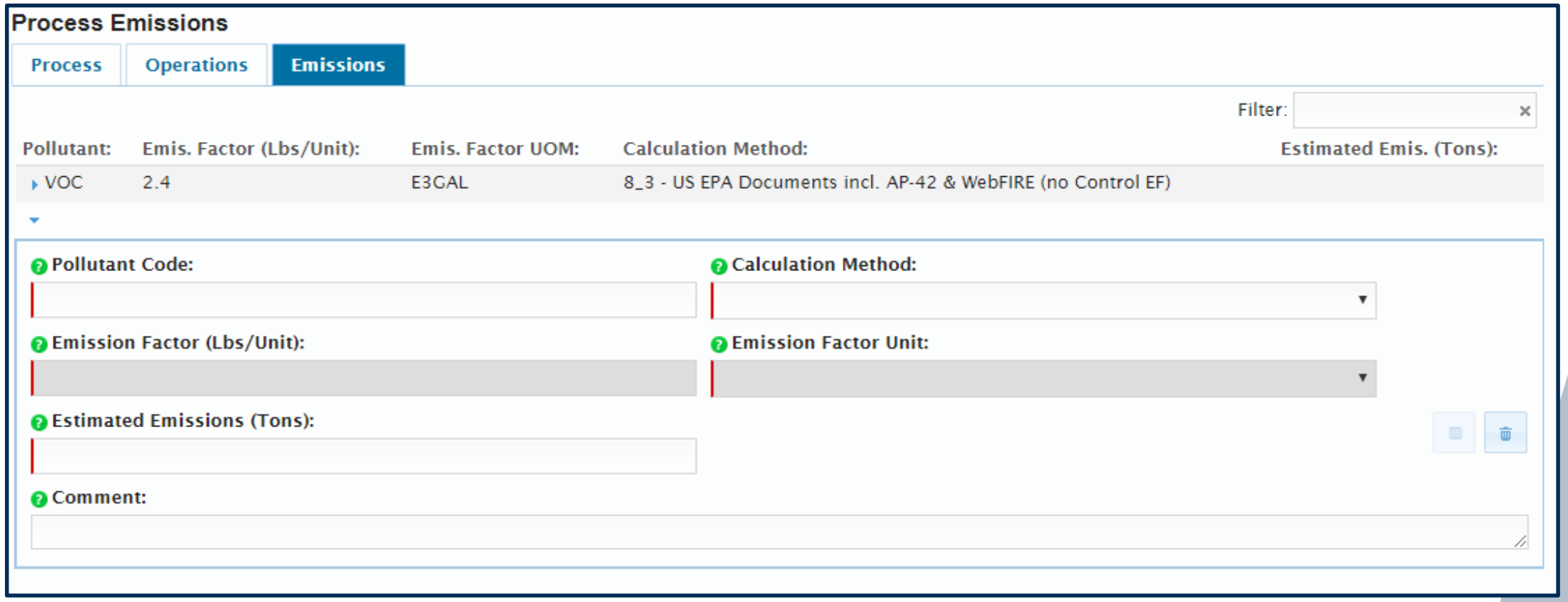
OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Calculation Methods without Emission Factors

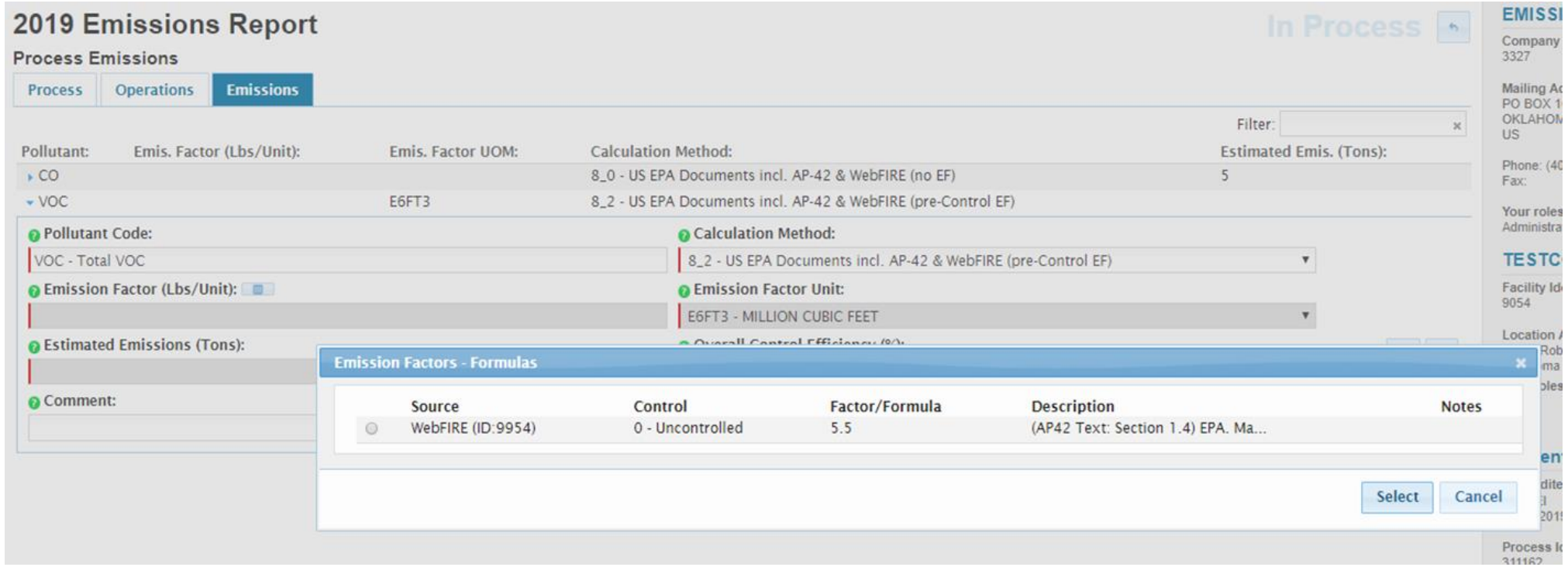
- Continuous Emission Monitoring System (CEMS)
- Portable Electrochemical Analyzer (PEA) Tests
- Speciation Profile
- AMINECalc
- E&P TANKS
- US EPA TANKS 4.09
- ProMax
- Vasquez-Beggs Equation

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

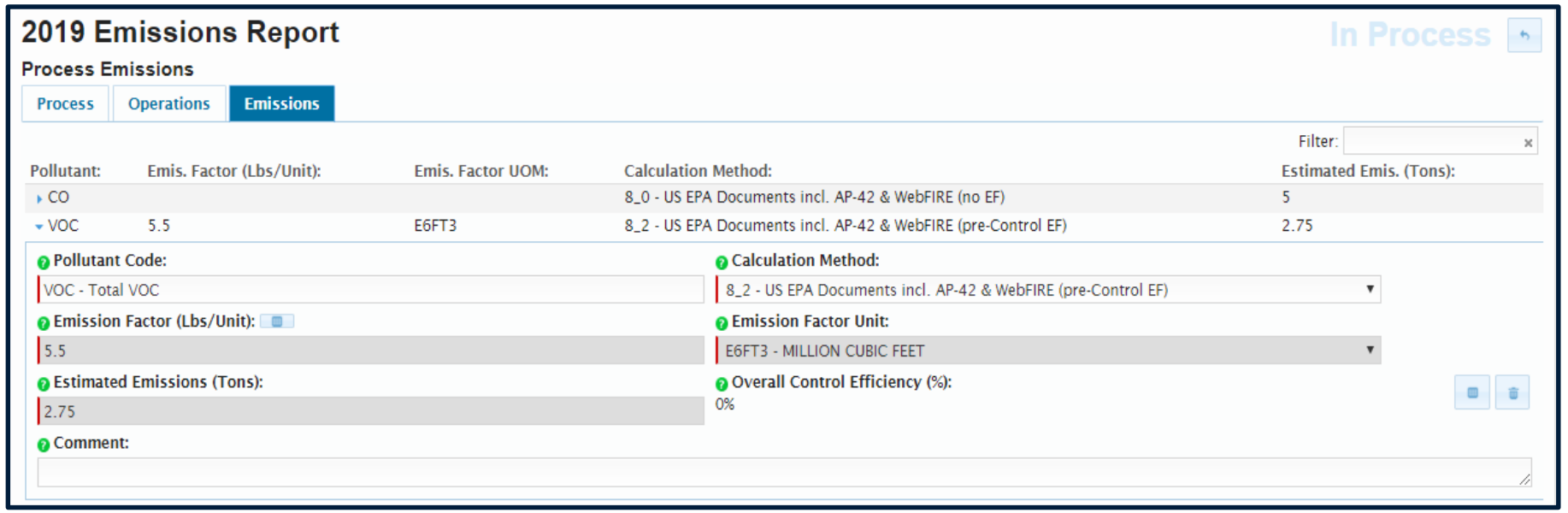
Emissions Tab



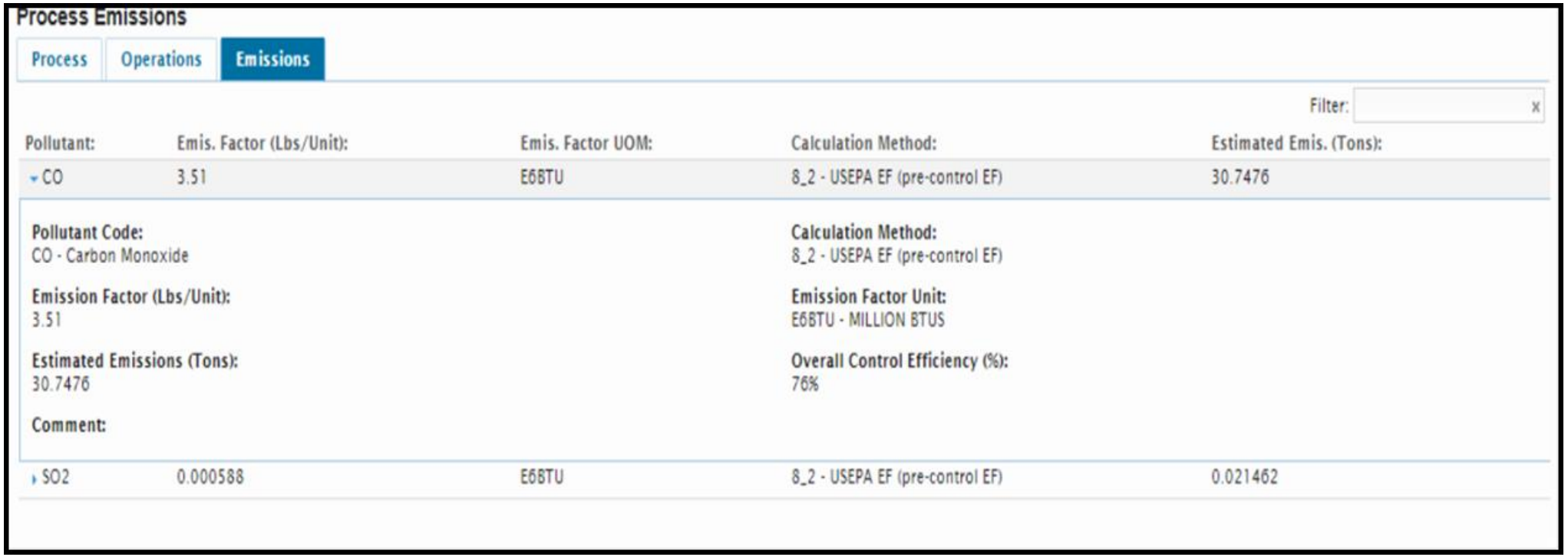
Auto-Calculation



Auto-Calculation



Emissions With Associated Control Device



Process Emissions

Process | Operations | Emissions

Filter:

Pollutant:	Emis. Factor (Lbs/Unit):	Emis. Factor UOM:	Calculation Method:	Estimated Emis. (Tons):
CO	3.51	E6BTU	8_2 - USEPA EF (pre-control EF)	30.7476

Pollutant Code:
CO - Carbon Monoxide

Calculation Method:
8_2 - USEPA EF (pre-control EF)

Emission Factor (Lbs/Unit):
3.51

Emission Factor Unit:
E6BTU - MILLION BTUS

Estimated Emissions (Tons):
30.7476

Overall Control Efficiency (%):
76%

Comment:

SO2	0.000588	E6BTU	8_2 - USEPA EF (pre-control EF)	0.021462

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Summary

- Review data loaded from Redbud as the applications have very different data structures
  - Control devices, release points, design capacity, fuel heat content, etc.
- When creating new records is best to progress from left to right to avoid later validation and linking issues
  - Facility –Release Point – Control Device – Emission Unit – Unit Process – Process Emissions
- The SLEIS homepage and emission inventory website have additional resources to aid in creating your inventory

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Questions?

Emissions Calculations

Grant Loney, Environmental Programs Specialist

Outline

- Overview of General Equation
- Calculation Methods available in SLEIS
- Emission Factors in SLEIS
- Example calculations
  - Calculation of CO, NOx, and Benzene from an Emergency Engine
  - Calculation of Total VOC and Formaldehyde from a Compressor Engine
  - Calculation of PM-10 and PM-2.5 from Grain Receiving
  - Calculation of PM-10 and PM-2.5 from a Limestone Conveyor
  - Calculation of Hexavalent Chromium from Shielded Metal Arc Welding
  - Calculation of Total VOC and Xylenes from a Paint Booth
  - Calculation of Total VOC from a Tank-Flare system

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

General Equation

$$A \times EF = E$$

A is Activity Rate

EF is Emission Factor

E is calculated Emissions

All three have **units**!

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Overview of General Equation

A x EF = E **A is Activity Rate**

Activity Rate refers to the amount of the activity that occurs in a given year that is associated with emissions.

Examples include:

- Million standard cubic feet of natural gas burned by an engine
- Vehicle miles travelled on a dirt road
- Barrels of hydrocarbon in a storage tank
- Gallons of paint used in a spray booth
- Tons of rock crushed
- And many more…

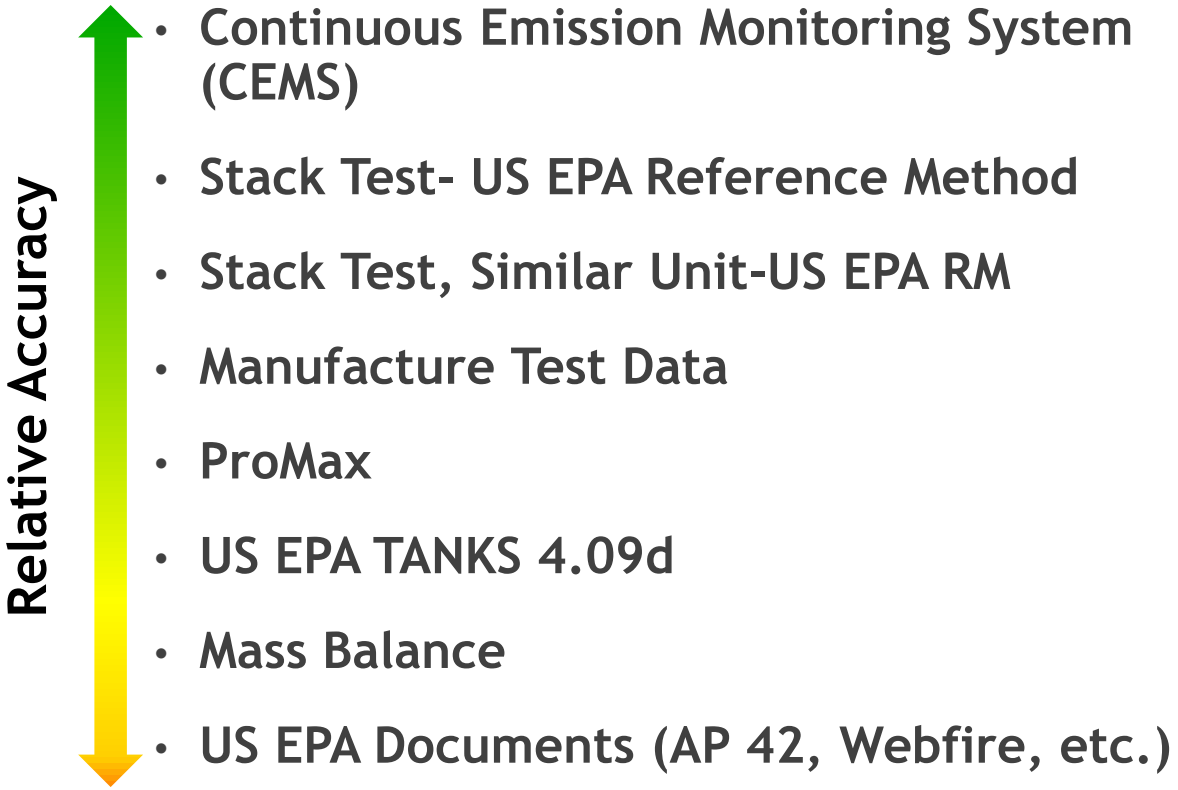
OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Overview of General Equation

$$A \times EF = E$$

EF is Emission Factor

Use the most accurate Emission Factor available to you!



OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Overview of General Equation

A x EF = E **E is for Calculated Emissions**

- Calculated Emissions will always be reported in units of tons.

- The correct Emission Factor and a little bit of unit analysis will help you get from the units of the Activity Rate to tons of emissions.

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Helpful Documents and Links

- DEQ Permitting Advice Documents

https://www.deq.ok.gov/air-quality-division/air-permits/permit-guidance/

- DEQ Reporting Guidance and FAQs

https://www.deq.ok.gov/air-quality-division/emissions-inventory/reporting-guidance/

- EPA Webfire

https://cfpub.epa.gov/webfire/

- EPA SCC Search

https://ofmpub.epa.gov/sccwebservices/sccsearch/

- Your Permit/Permit Application

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

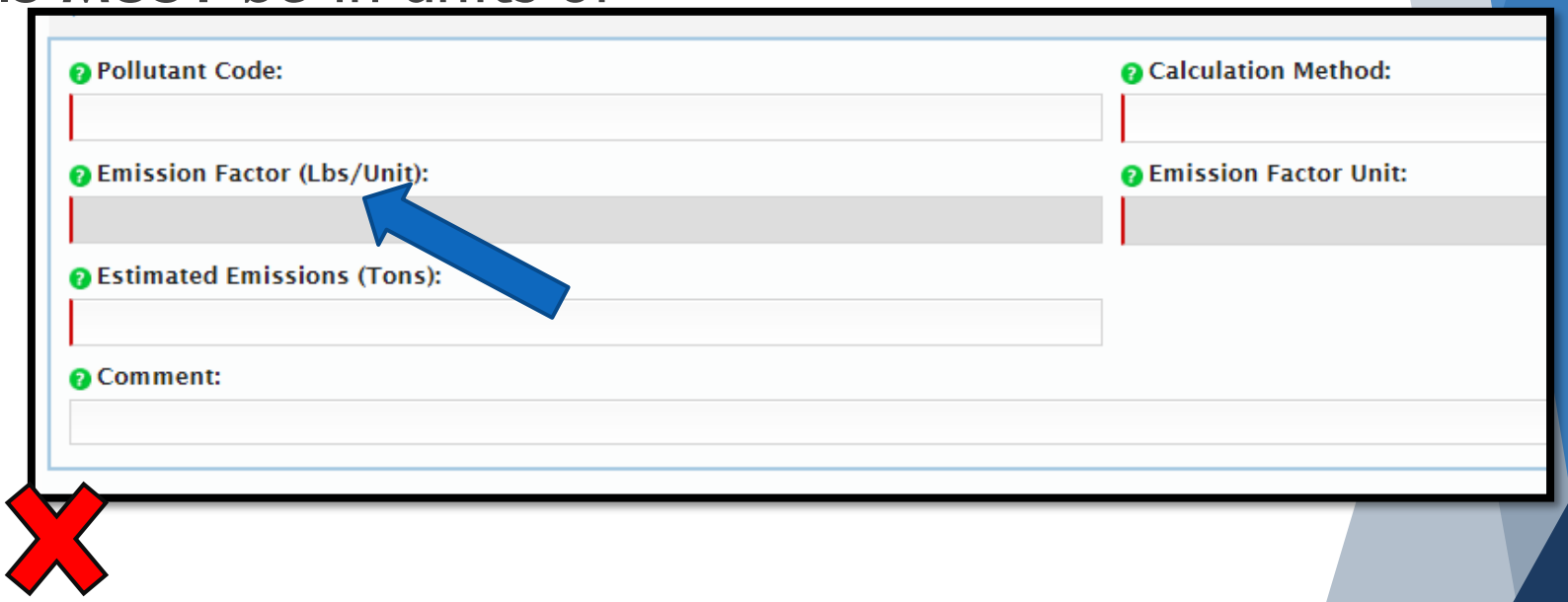
SLEIS Calculation Methods

- More Calculation Methods than there were previously. Some are familiar, some are new.
- Stack tests now **require** stack test date!
- New attribute of calculation methods.
  - No EF
  - No Control EF
  - Pre-Control EF
  - Post-Control EF

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Emission Factors in SLEIS

- All emission factors in SLEIS **MUST** be in units of pounds/unit.
  - Pounds/MMBTU
  - Pounds/MMSCF
  - Pounds/ton
  - Pounds/gallon
  - Grams/horsepower-hour
    - Pounds/hp-hr = (grams/hp-hr) / 453.592



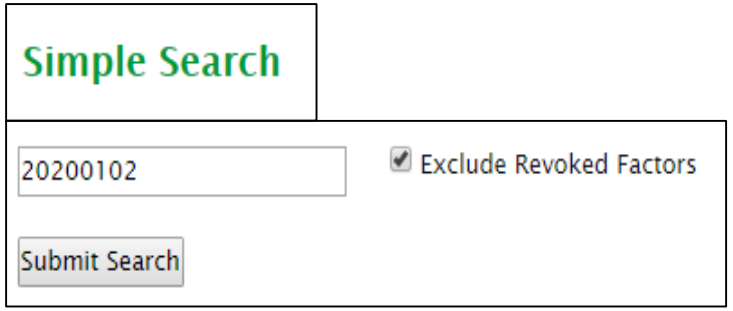
Emergency Engine

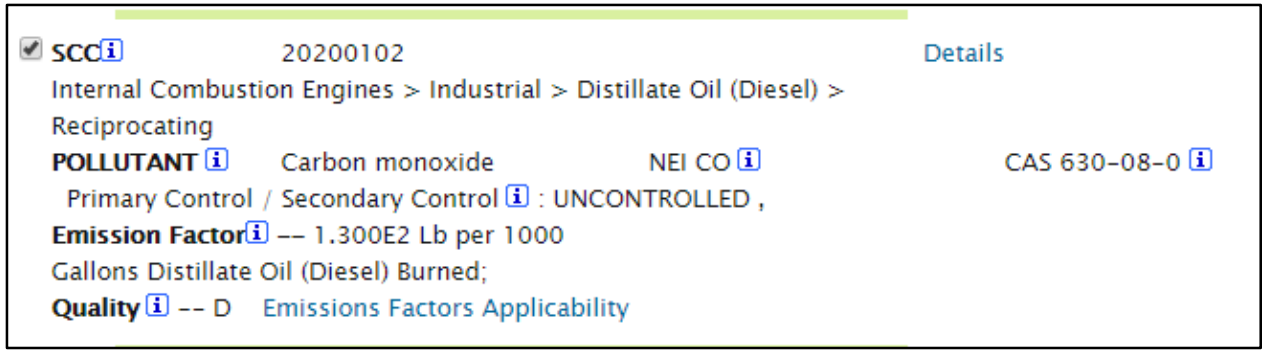
- Activity Information
- Source Classification Code: 20200102
- Process Material: Diesel Fuel
- Process Rate: 500 gallons
- Annual Hours of Operation: 50 hours
- Design Capacity (if applicable): 400 hp
- Fuel Data (if applicable): 140 MMBTU/1,000 gal
- Control Scenario (if applicable): none

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Emergency Engine

- Relevant Emission Factors
  - Carbon Monoxide (CO): **1.3E2** Lb per 1000 gallons = 130 pounds/1,000 gal
  - Nitrogen Oxides (NOx): **6.04E2** Lb per 1000 gallons = 604 pounds/1,000 gal
  - Benzene: **9.33E-4** Lb per Million BTUs = 0.000933 pounds/MMBTU



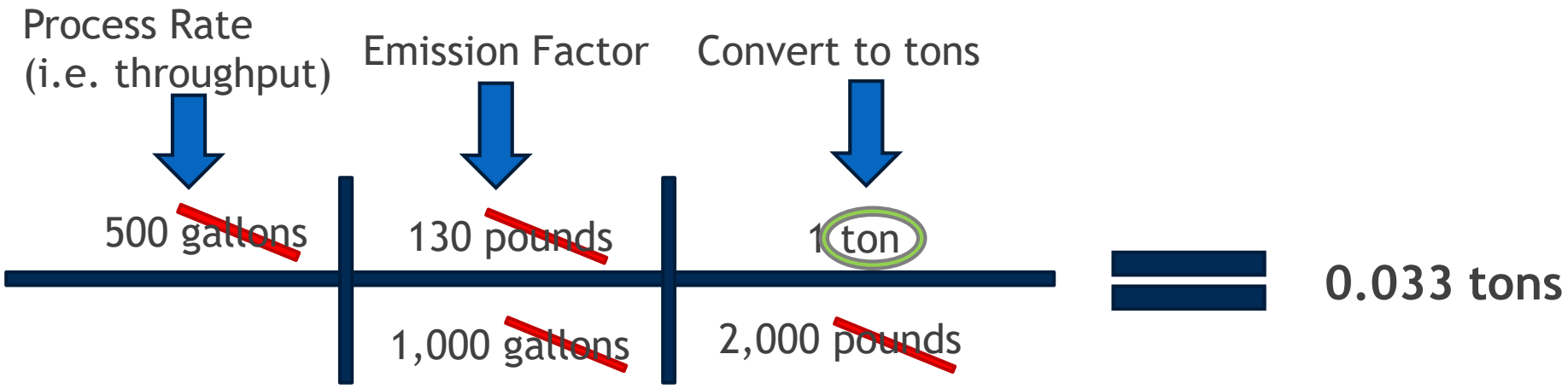


https://cfpub.epa.gov/webfire/index.cfm?action=fire.SearchEmissionFactors

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

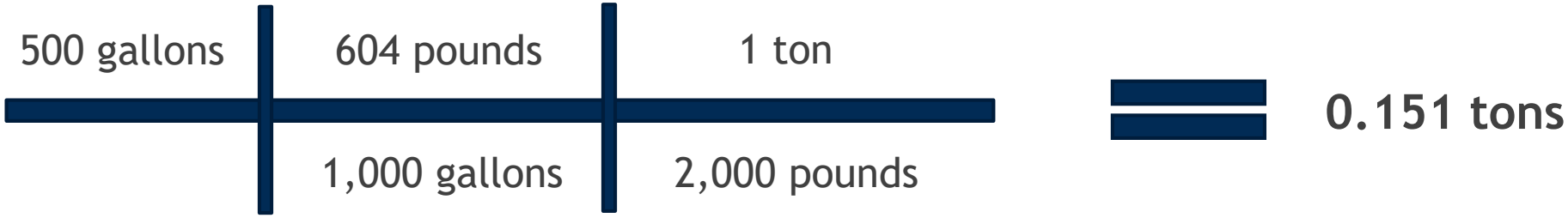
Emergency Engine

Carbon Monoxide Calculation



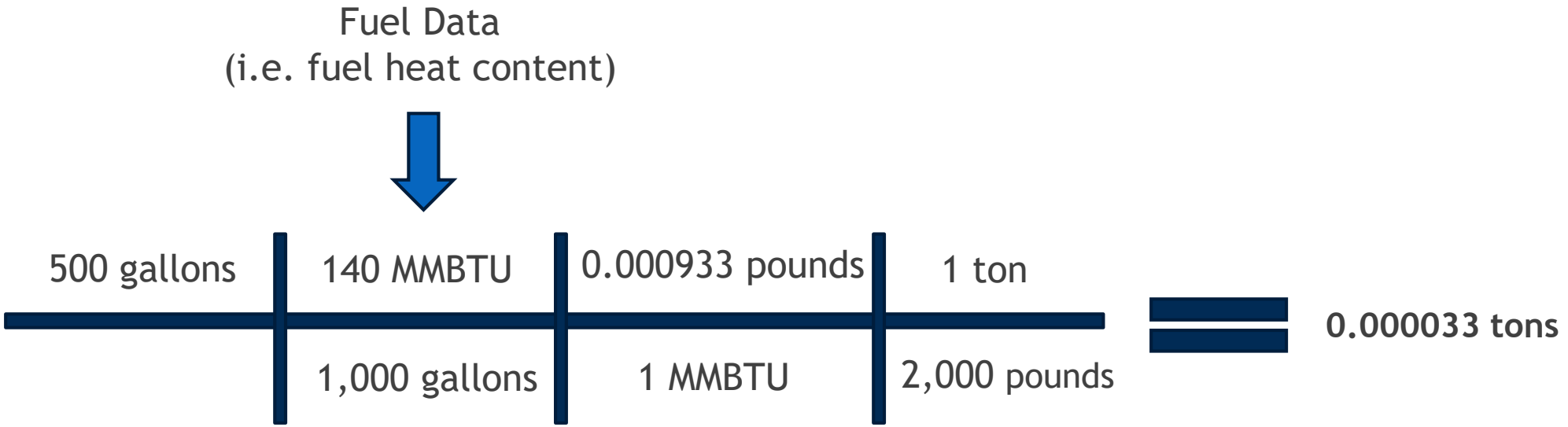
Emergency Engine

NOx Calculation



Emergency Engine

- Benzene Calculation



Reporting Threshold

Compressor Engine

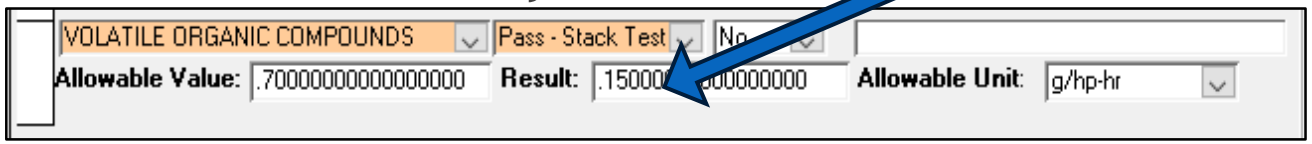
Activity Information

- SCC: 20200254
- Process Material: Natural Gas
- Annual Process Rate: 115 MMscf
- Annual Hours of Operation: 8,760 hours
- Design Capacity: 1,380 hp
- Fuel Data: 1,020 MMBtu/MMscf
- Control Scenario: Oxidation Catalyst (100% capture,50% control)

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Compressor Engine

- Total VOC-Potential EF Problems
  - Emission Factor for Total VOC obtained from a Stack Test using Method 25A
    - Methods 18 and 25A are known to not detect formaldehyde, which is a VOC. Because of this you must add a formaldehyde emission factor to the factor generated by the stack test when calculating Total VOC.
    - Total VOC factor from Stack Test: 0.15 grams/horsepower-hour
    - Formaldehyde factor from Manufacturer data: 0.44 g/hp-hr



EMISSIONS DATA - ENGINE OUT			
NOx (as NO2)	(11)(12)	g/bhp-hr	0.50
CO	(11)(13)	g/bhp-hr	2.43
THC (mol. wt. of 15.84)	(11)(13)	g/bhp-hr	4.77
NMHC (mol. wt. of 15.84)	(11)(13)	g/bhp-hr	0.72
NMNEHC (VOCs) (mol. wt. of 15.84)	(11)(13)(14)	g/bhp-hr	0.48
HCHO (Formaldehyde)	(11)(13)	g/bhp-hr	0.44
CO2	(11)(13)	g/bhp-hr	474
EXHAUST OXYGEN	(11)(15)	% DRY	9.0
LAMBDA	(11)(15)		1.68

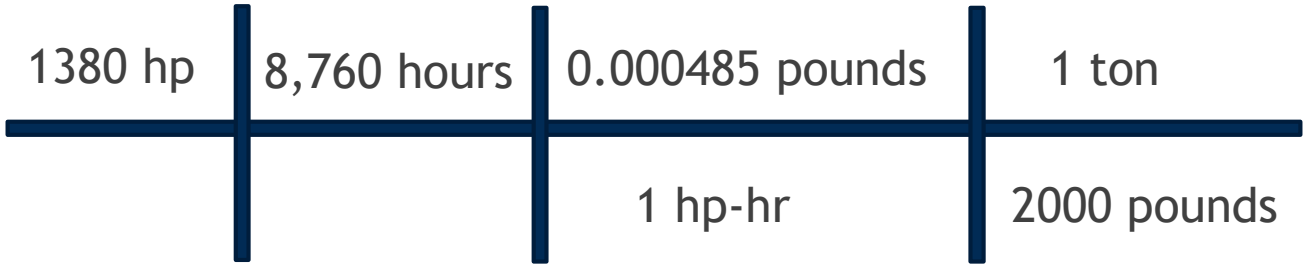
Don't forget the control scenario, or to convert EF to pounds/hp-hr!

Compressor Engine

- Formaldehyde emission factor from Manufacturer data:
  0.44 g/hp-hr
- Control scenario: 100% capture, 50% control
- Formaldehyde emission factor with control:
  0.44 g/hp-hr x (1-(100% x 50%)) = 0.22 g/hp-hr
- Combined emission factor for Total VOC:
  0.15 + 0.22 = 0.37 g/hp-hr
- Formaldehyde emission factor used in SLEIS:
  (0.22 g/hp-hr) / (453.592 g/pound) = **0.000485 pounds/hp-hr**
- Total VOC emission factor used in SLEIS:
  (0.37 g/hp-hr) / (453.592 g/pound) = **0.0008157 pounds/hp-hr**

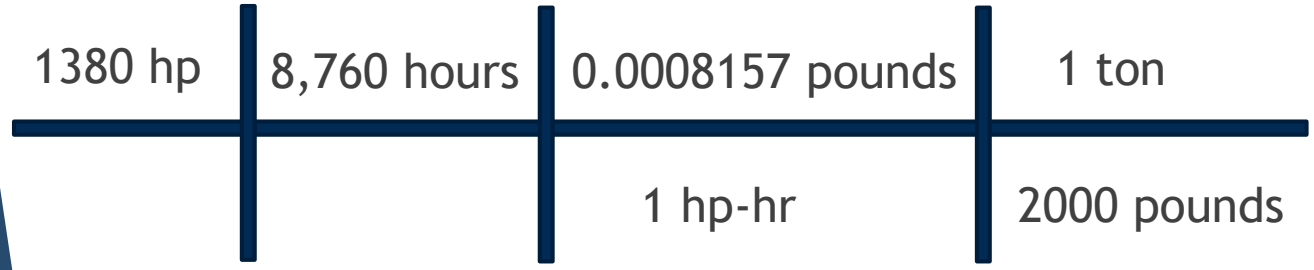
OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Compressor Engine



2.932 tons formaldehyde

***Remember, as with all VOC HAPs, formaldehyde should be reported individually, *AND* as part of Total VOC**



4.93 tons Total VOC

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Grain Receiving

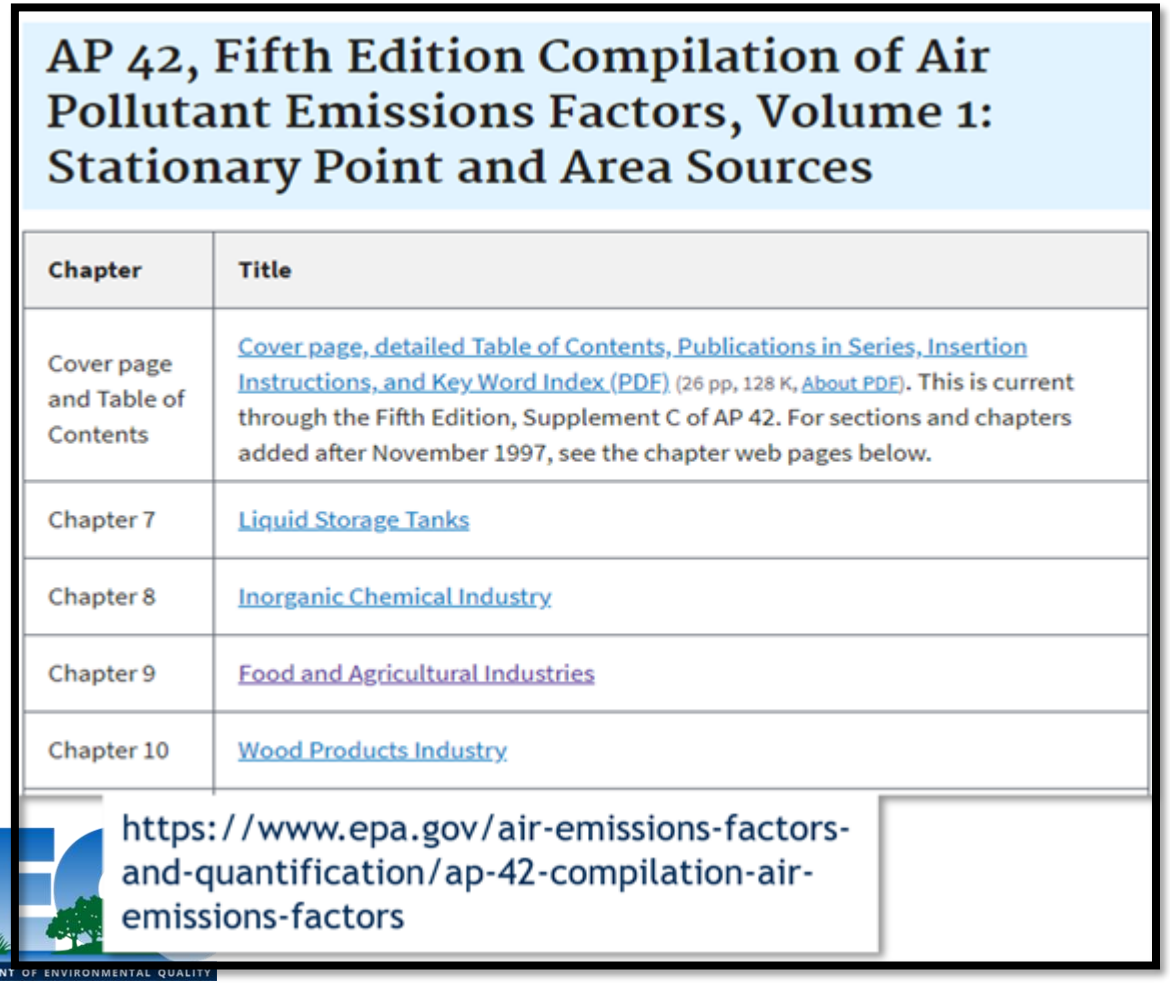
Activity Information

- SCC: 30200552
- Process Material: Grain
- Annual Process Rate: 260,816 tons
- Hours of Operation: 932 hours
- Control Scenario: Baghouse (100% capture, 90% control)

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Grain Receiving

- How to find the AP-42 Emission Factor for Grain Receiving from a Hopper Truck



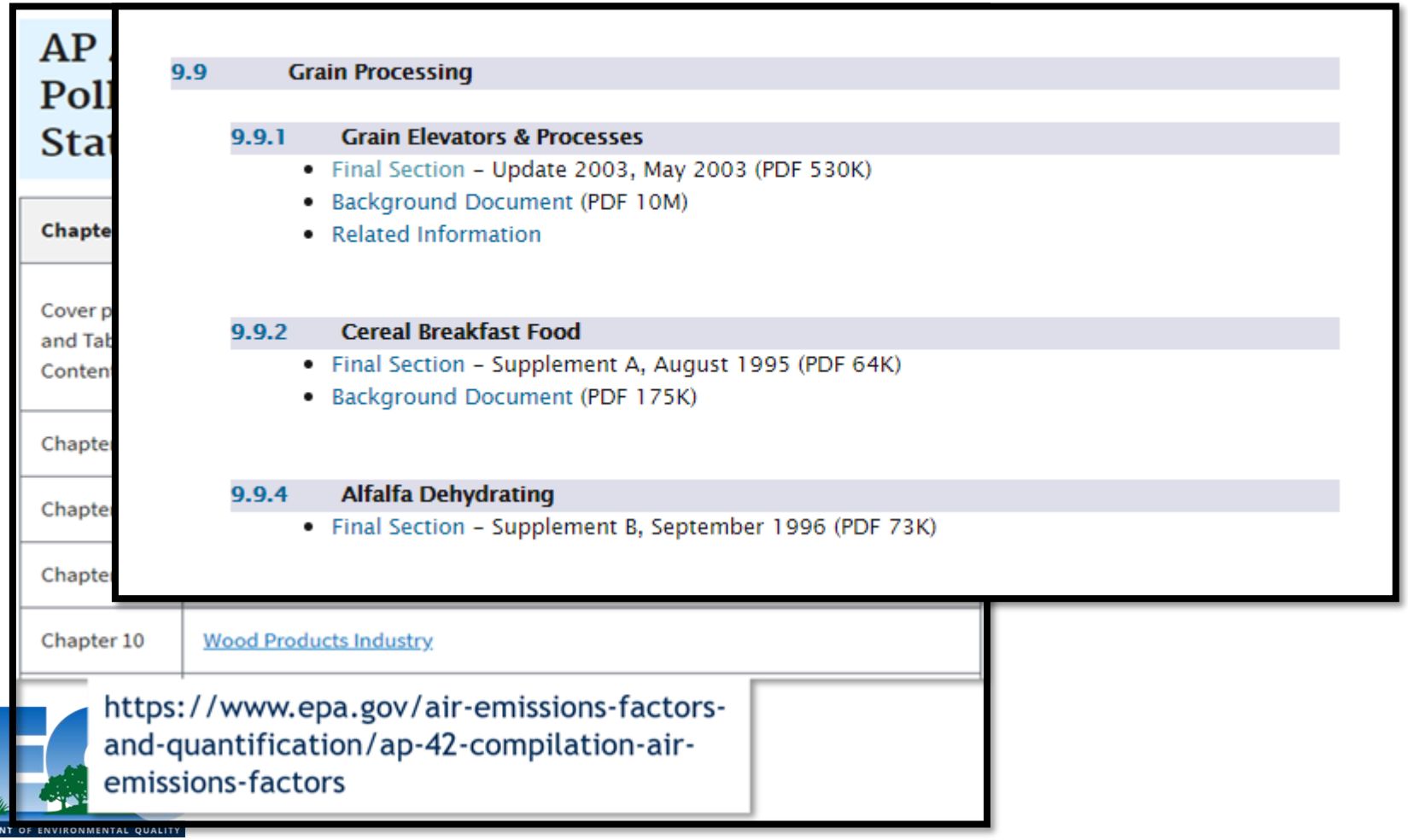
AP 42, Fifth Edition Compilation of Air Pollutant Emissions Factors, Volume 1: Stationary Point and Area Sources

Chapter	Title
Cover page and Table of Contents	Cover page, detailed Table of Contents, Publications in Series, Insertion Instructions, and Key Word Index (PDF) (26 pp, 128 K, About PDF). This is current through the Fifth Edition, Supplement C of AP 42. For sections and chapters added after November 1997, see the chapter web pages below.
Chapter 7	Liquid Storage Tanks
Chapter 8	Inorganic Chemical Industry
Chapter 9	Food and Agricultural Industries
Chapter 10	Wood Products Industry

https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors

Grain Receiving

- How to find the AP-42 Emission Factor for Grain Receiving from a Hopper Truck



Grain Receiving

- How to find the AP-42 Emission Factor for Grain Receiving from a Hopper Truck

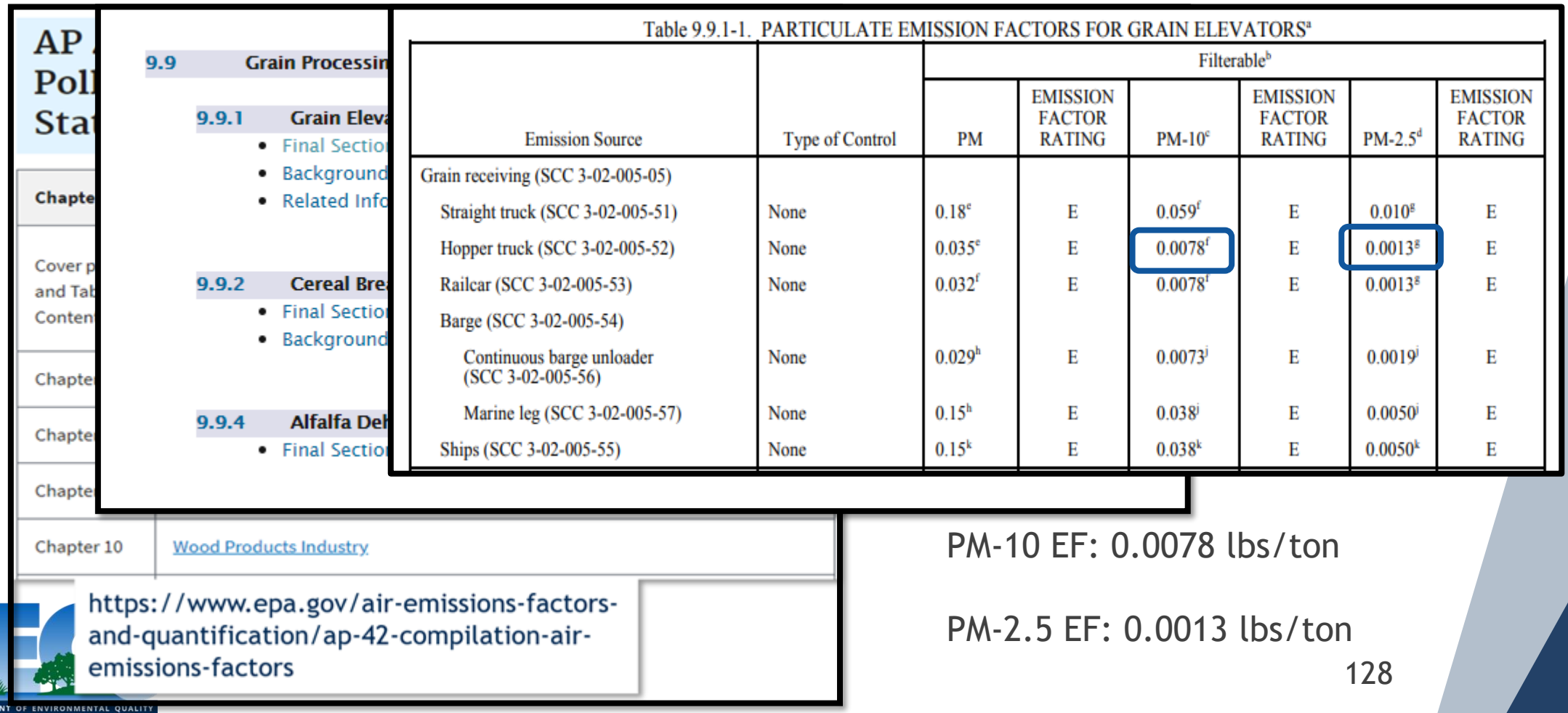


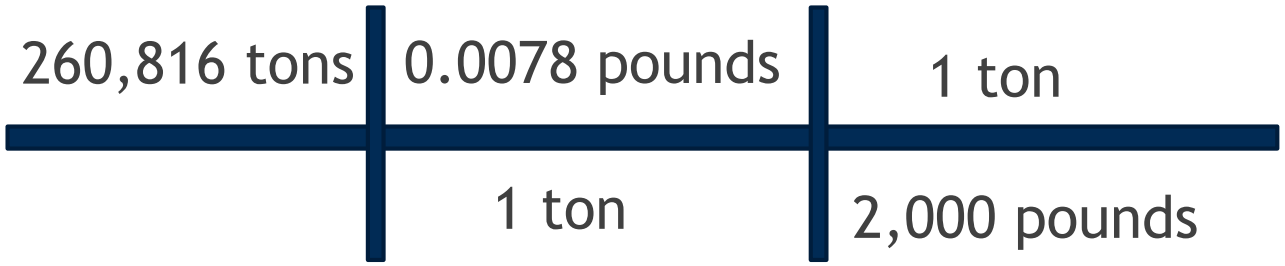
Table 9.9.1-1. PARTICULATE EMISSION FACTORS FOR GRAIN ELEVATORS[a]

Emission Source	Type of Control	Filterable[b] PM	EMISSION FACTOR RATING	PM-10[c]	EMISSION FACTOR RATING	PM-2.5[d]	EMISSION FACTOR RATING
Grain receiving (SCC 3-02-005-05)							
Straight truck (SCC 3-02-005-51)	None	0.18[e]	E	0.059[f]	E	0.010[g]	E
Hopper truck (SCC 3-02-005-52)	None	0.035[e]	E	0.0078[f]	E	0.0013[g]	E
Railcar (SCC 3-02-005-53)	None	0.032[f]	E	0.0078[f]	E	0.0013[g]	E
Barge (SCC 3-02-005-54)							
Continuous barge unloader (SCC 3-02-005-56)	None	0.029[h]	E	0.0073[j]	E	0.0019[j]	E
Marine leg (SCC 3-02-005-57)	None	0.15[h]	E	0.038[j]	E	0.0050[j]	E
Ships (SCC 3-02-005-55)	None	0.15[k]	E	0.038[k]	E	0.0050[k]	E

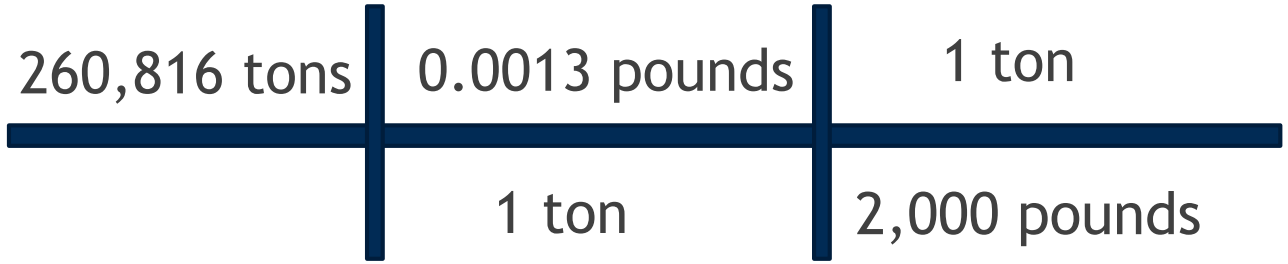
PM-10 EF: 0.0078 lbs/ton

PM-2.5 EF: 0.0013 lbs/ton

Grain Receiving



= 1.017 tons PM-10



= 0.1695 tons PM-2.5

We're not done yet! Don't forget to apply the Control Scenario!

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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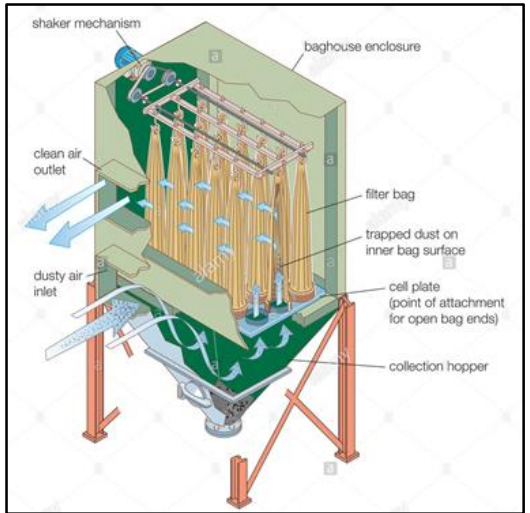
Grain Receiving

Uncontrolled PM-10 Emissions = 1.017 tons
Uncontrolled PM-2.5 Emission = 0.1695 tons
Control Scenario: 100% Capture; 90% Control

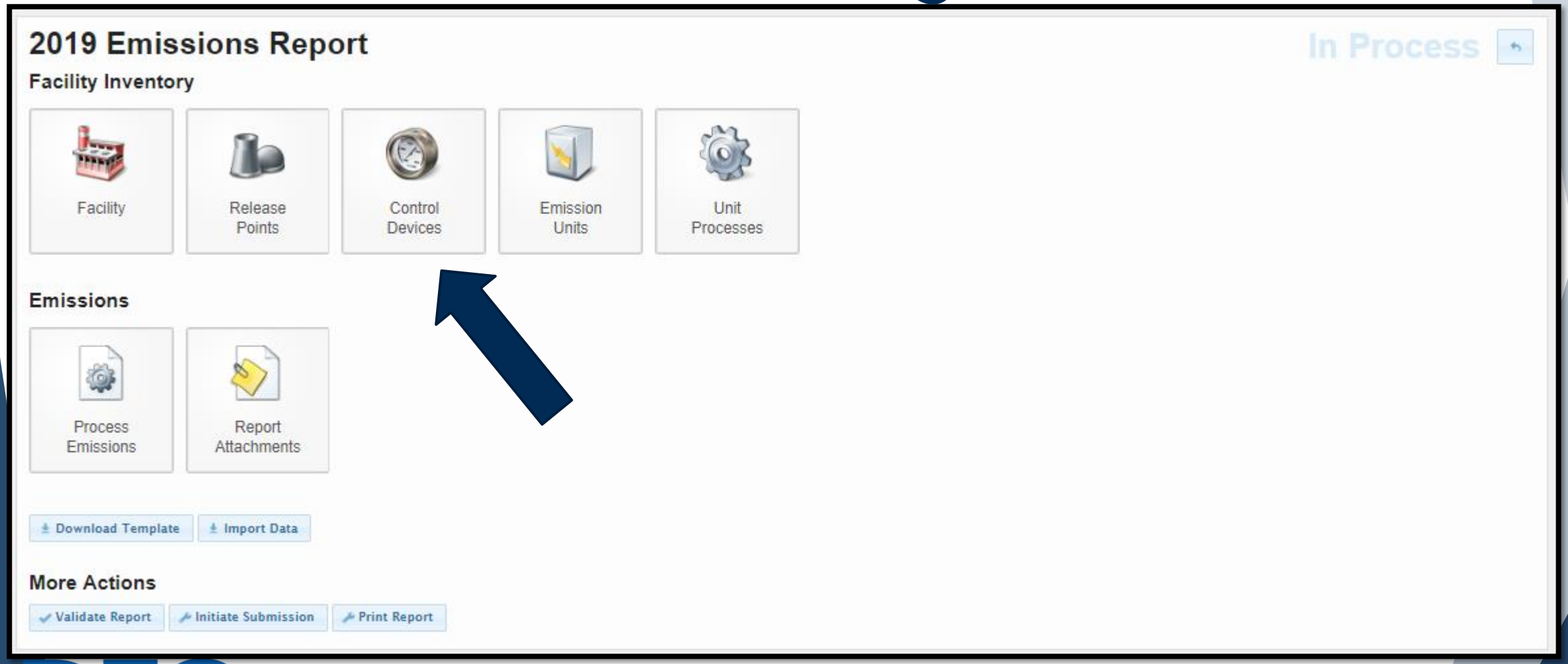
Reportable PM-10 Emissions: 1.017 * (1-(100%*90%)) =
1.017*0.1 = **0.102 tons**

Reportable PM-2.5 Emissions: 0.1695 * (1-(100%*90%)) =
0.1695*0.1 = **0.017 tons**

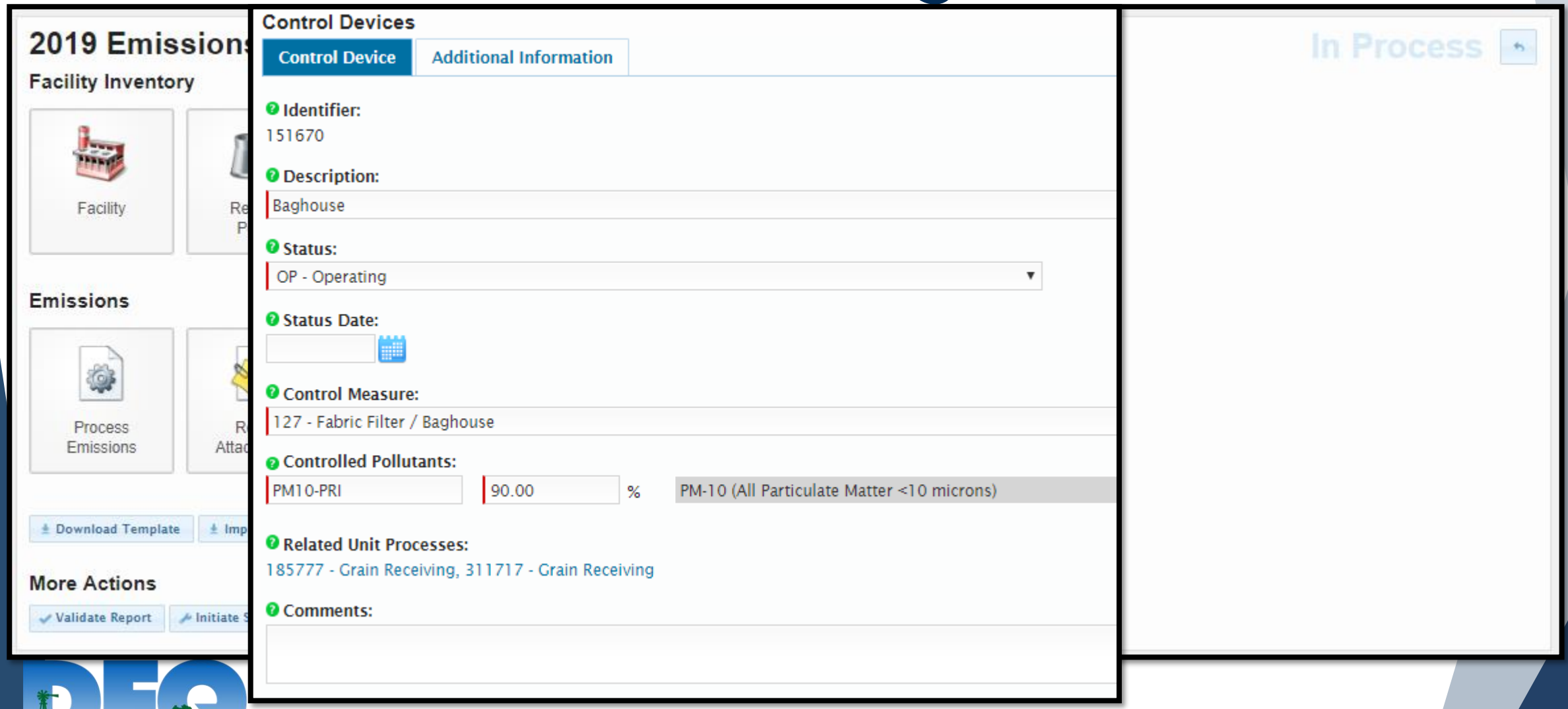


OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Grain Receiving

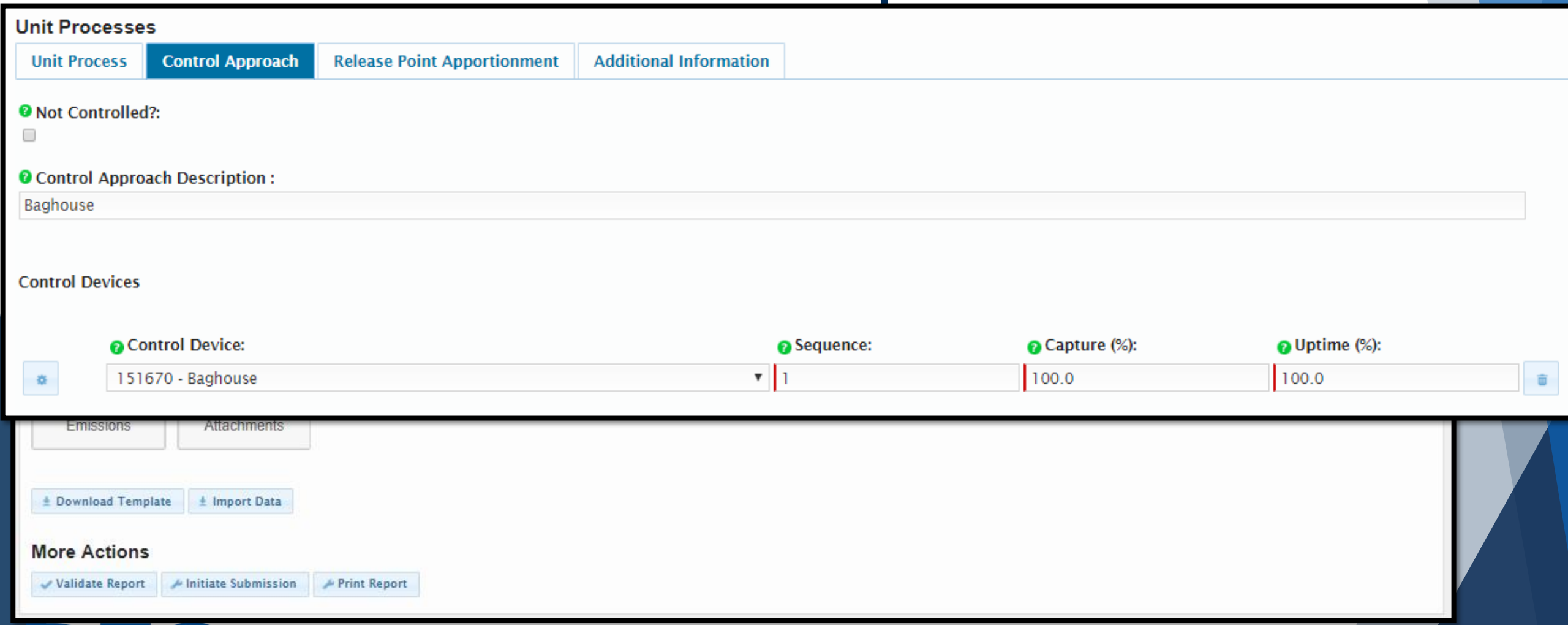


Grain Receiving

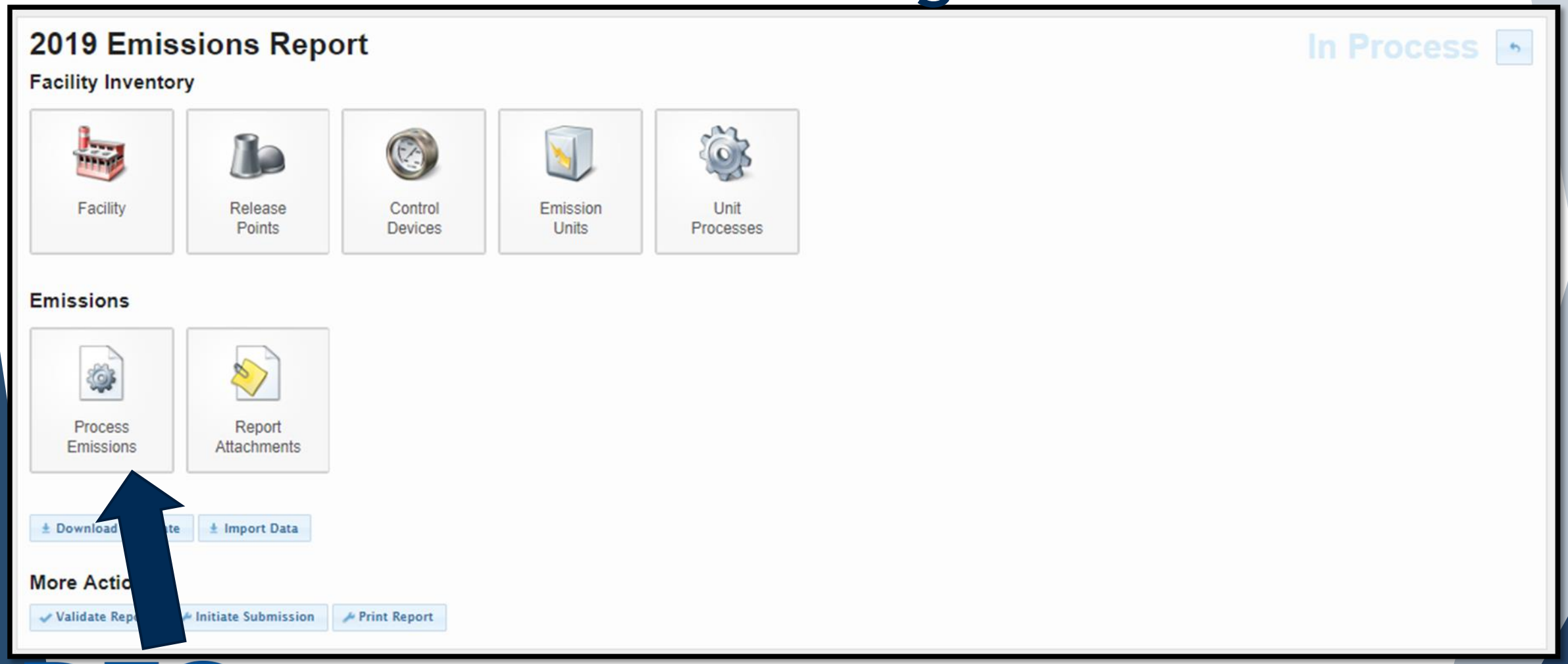


Grain Receiving

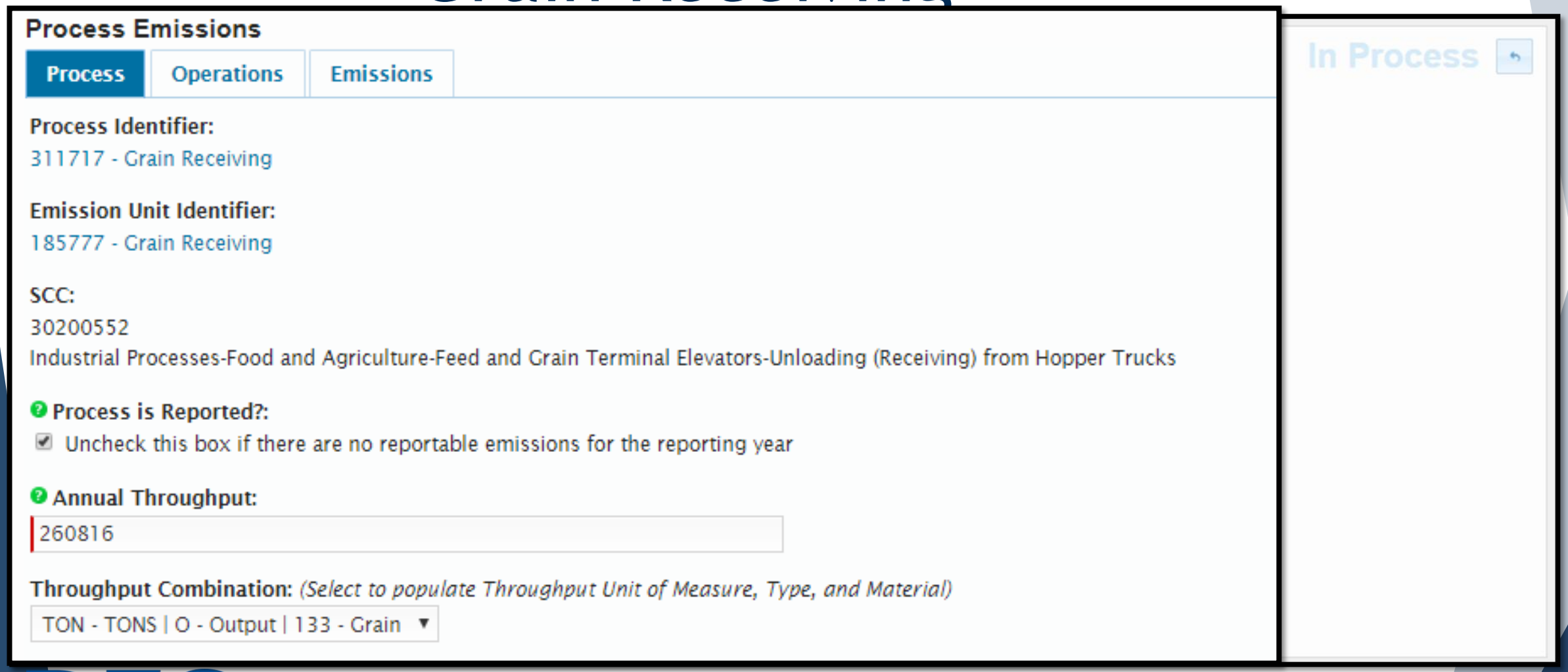
Grain Receiving



Grain Receiving



Grain Receiving



Grain Receiving

Process Emissions

Process | Operations | Emissions

Filter:

Pollutant:	Emis. Factor (Lbs/Unit):	Emis. Factor UOM:	Calculation Method:	Estimated Emis. (Tons):
PM10-PRI	0.0078	TON	10_2 - OK DEQ Approved Method (pre-Control EF)	0.101718239999999

Pollutant Code:
PM10-PRI - PM-10 (All Particulate Matter <10 microns)

Calculation Method:
10_2 - OK DEQ Approved Method (pre-Control EF)

Emission Factor (Lbs/Unit):
0.0078

Emission Factor Unit:
TON - TONS

Estimated Emissions (Tons):
0.101718239999999

Overall Control Efficiency (%):
90%

Comment:
EF from AP-42 Table 9.9.1-1

Uncheck this box if there are no reportable emissions for the reporting year

Annual Throughput:
260816

Throughput Combination: *(Select to populate Throughput Unit of Measure, Type, and Material)*
TON - TONS | O - Output | 133 - Grain

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Limestone Conveyor

Activity Information

- SCC: 30510105
- Process Material: Limestone
- Annual Process Rate: 5,261,305 tons
- Hours of Operation: 6,782 hours
- Control Scenario: Dust Suppression

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Limestone Conveyor

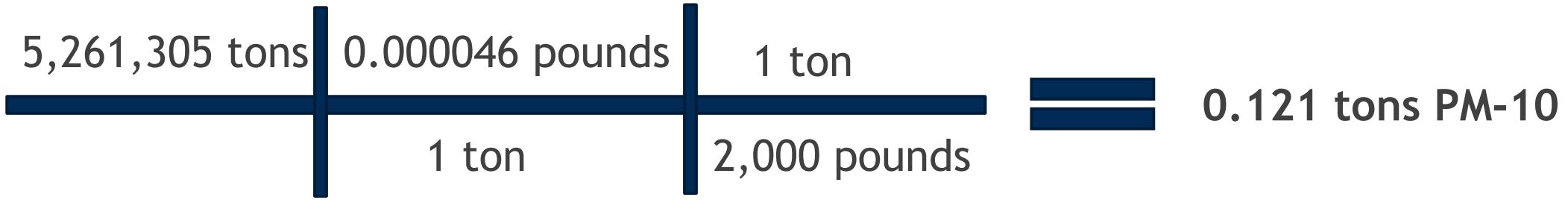
- Relevant Emission Factors
  - PM-10: 0.000046 pounds/ton
  - PM-2.5: 0.000013 pounds/ton
    - Factors from AP-42 11.19.2
    - Both of these are Controlled Factors
      - Do I need to apply my Control Scenario?
      - What is the correct calculation method to select?

Table 11.19.2-2 (English Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (lb/Ton)[a]

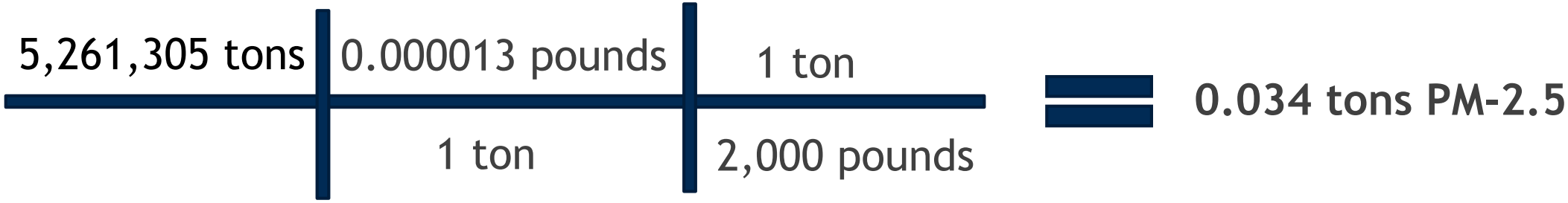
Source [b]	Total Particulate Matter [r,s]	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Conveyor Transfer Point (SCC 3-05-020-06)	0.0030[h]	E	0.00110[h]	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00014[t]	E	4.6×10^{-5}[s]	D	1.3×10^{-5}[q]	E

8_0 - US EPA Documents incl. AP-42 & WebFIRE (no EF)
8_3 - US EPA Documents incl. AP-42 & WebFIRE (no Control EF)
8_2 - US EPA Documents incl. AP-42 & WebFIRE (pre-Control EF)
8_1 - US EPA Documents incl. AP-42 & WebFIRE (post-Control EF)

Limestone Conveyor



0.121 tons PM-10

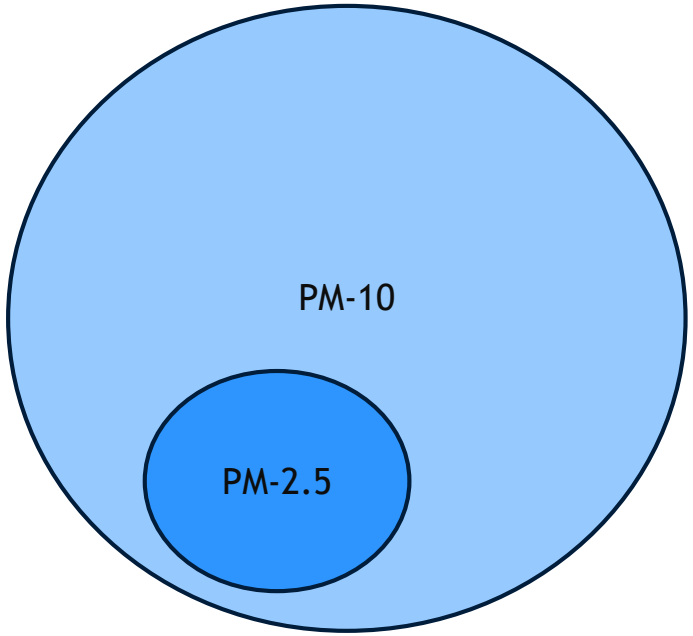


0.034 tons PM-2.5

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Notes About PM

- PM-2.5 is a subset of PM-10. This means:
  - 1. PM-10 will ALWAYS be greater than or equal to PM-2.5
  - 2. If PM-2.5 is reported, PM-10 MUST also be reported.



OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Shielded Metal Arc Welding

Activity Information

- SCC: 30905120
- Process Material: Shielded Metal Arc Welding Electrode E316
- Annual Process Rate: 27,000 pounds
- Hours of Operation: 1820 hours
- Control Scenario: Uncontrolled

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Shielded Metal Arc Welding

- Relevant Emission Factors
  - Chromium VI: 0.332 lbs/1,000 lbs

AP 42, Fifth Edition Compilation of Air Pollutant Emissions Factors, Volume 1: Stationary Point and Area Sources

Chapter	Title
Cover page and Table of Contents	Cover page, detailed Table of Contents, Publications in Series, Insertion Instructions, and Key Word Index (PDF) (26 pp, 128 K, About PDF). This is current through the Fifth Edition, Supplement C of AP 42. For sections and chapters added after November 1997, see the chapter web pages below.
Chapter 11	Mineral Products Industry
Chapter 12	Metallurgical Industry
Chapter 13	Miscellaneous Sources

Welding Process	Electrode Type (With Last 2 Digits Of SCC)		HAP Emission Factor (10^{-1} g/kg [10^{-1} lb/10^{3} lb			
			Cr	Cr(VI)	Co	
SMAW[c] (SCC 3-09-051)	14Mn-4Cr	(-04)	13.9	ND	ND	2
	E11018	(-08)[h]	ND	ND	ND	
	E308	(-12)[j]	3.93	3.59	0.01	
	E310	(-16)[k]	25.3	18.8	ND	
	E316	(-20)[m]	5.22	3.32	ND	

Note: Report Chromium or Chromium VI. Do not report both!

Shielded Metal Arc Welding

$$\frac{27{,}000 \text{ pounds}}{1{,}000 \text{ pounds}} \times \frac{0.332 \text{ pounds}}{1 \text{ ton}} \times \frac{1 \text{ ton}}{2{,}000 \text{ pounds}} = \textbf{0.004 tons Chromium VI}$$

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Paint Booth

- Activity Information:
- Source Classification Code: 40200101
- Process Material: ZINC CLAD Epoxy Primer
- Process Rate: 800 gallons
- Hours Process Occurred: 2,080 hours
- Control Scenario (if applicable): none

Paint Booth

SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER
B69V100
PRODUCT NAME
ZINC CLAD® III HS Organic Zinc-Rich Epoxy Primer (Part B), Hardener
MANUFACTURER'S NAME
THE SHERWIN-WILLIAMS COMPANY
101 Prospect Avenue N.W.
Cleveland, OH 44115

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

% by Weight	CAS Number	Ingredient	Units	Vapor Pressure
2	100-41-4	Ethylbenzene		
		ACGIH TLV	100 PPM	7.1 mm
		ACGIH TLV	125 PPM STEL	
		OSHA PEL	100 PPM	
		OSHA PEL	125 PPM STEL	
12	1330-20-7	Xylene		
		ACGIH TLV	100 PPM	5.9 mm
		ACGIH TLV	150 PPM STEL	
		OSHA PEL	100 PPM	
		OSHA PEL	150 PPM STEL	

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

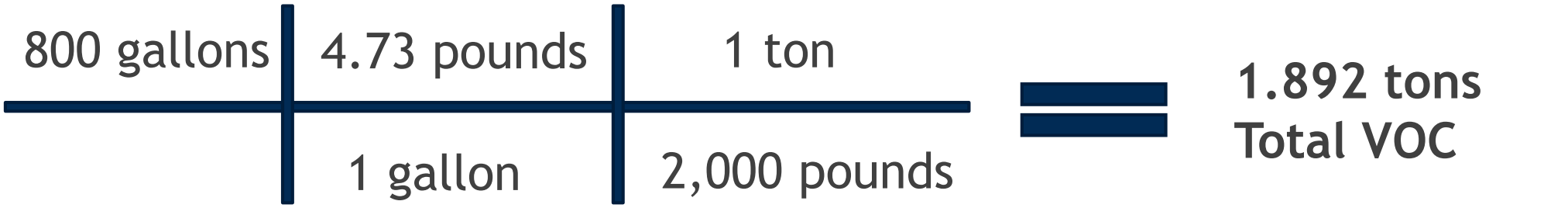
PRODUCT WEIGHT	7.85 lb/gal	940 g/l
SPECIFIC GRAVITY	0.94	
BOILING POINT	174 - 360 °F	78 - 182 °C
MELTING POINT	Not Available	
VOLATILE VOLUME	68%	
EVAPORATION RATE	Slower than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	N.A.	

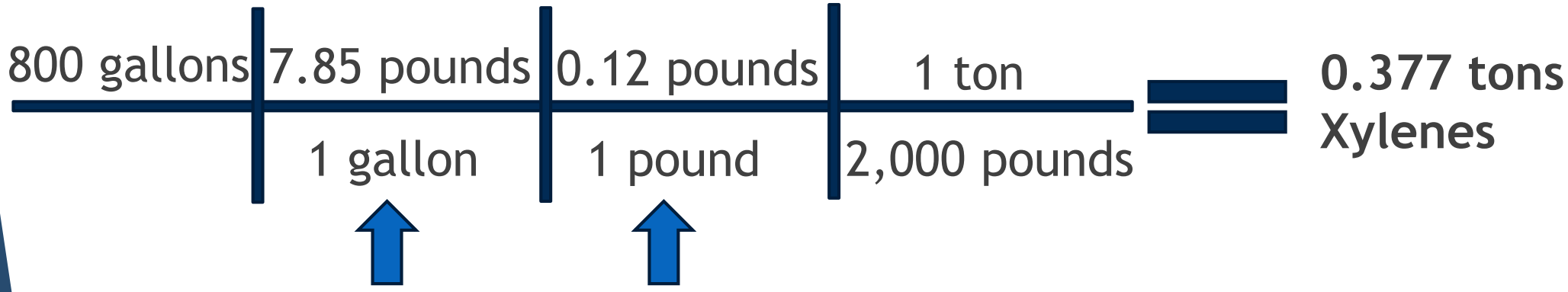
VOLATILE ORGANIC COMPOUNDS (VOC Theoretical - As Packaged)

4.73 lb/gal	567 g/l	Less Water and Federally Exempt Solvents
4.73 lb/gal	567 g/l	Emitted VOC

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Paint Booth


800 gallons
4.73 pounds
1 ton
1 gallon
2,000 pounds
1.892 tons
Total VOC


800 gallons
7.85 pounds
0.12 pounds
1 ton
1 gallon
1 pound
2,000 pounds
0.377 tons
Xylenes
Product Weight
Percent Xylenes

Tank-Flare System

- Process simulation software or AP-42 Chapter 7 can be used to calculate uncontrolled VOC emissions from a tank
  - Assume process simulation has been run and indicates **100 tons** of VOC emissions, if the system has no controls.
  - Vapor collection system has 98% capture efficiency
  - Flare has a 98% control efficiency for VOC

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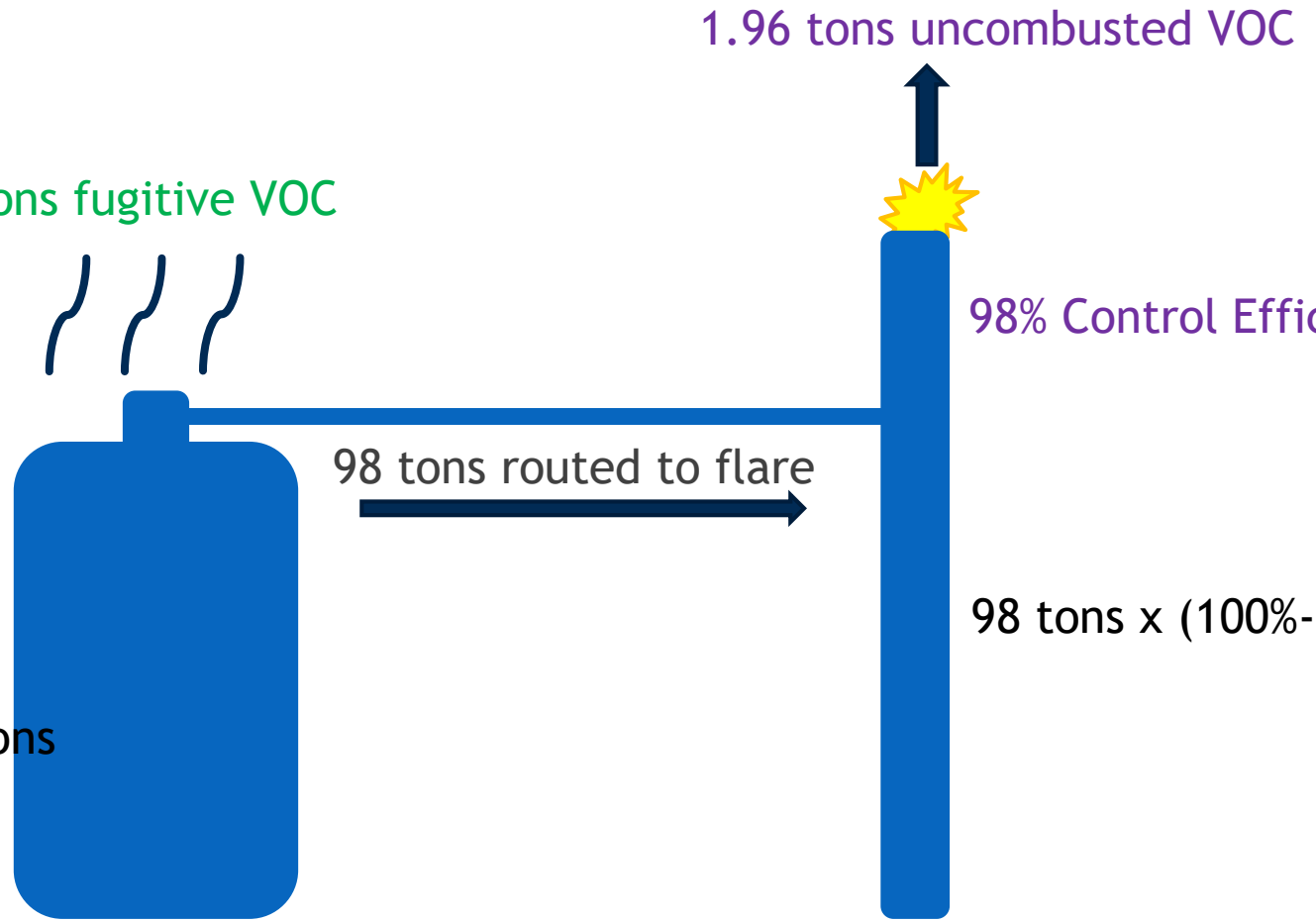
Tank-Flare System



Questions?

- Ask now or contact us at:
  - aei@deq.ok.gov-common inbox for Emissions Inventory Section
  - (405) 702-4100 –Air Quality Front Desk

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

SLEIS Data Validation & Quality Control (QC)

Michael Ketcham, Environmental Programs Specialist

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SLEIS Data Validation

Data Validation Within SLEIS

- SLEIS has some data validation built into the application.
  - Takes place on individual pages as you save & a final validation before you can submit
- When 2018 data was loaded, all reports were sent through the final validation process to see what issues came up.
- Some issues are due to differences between SLEIS & the previous data structure. These will have to be addressed before you can submit your 2019 report.

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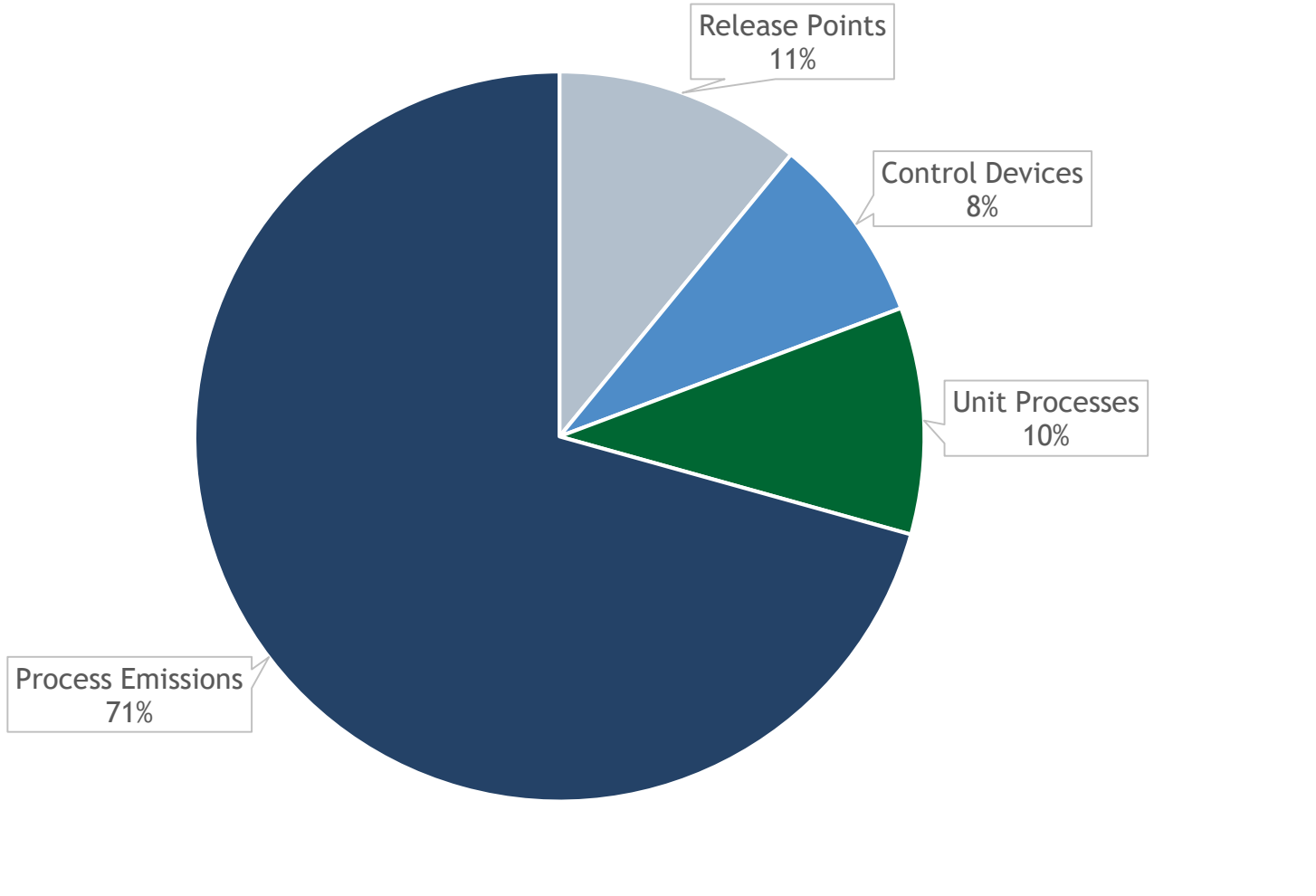
Error	# of hits
Process Emission Operations Actual Hours must be within 90%-110% of calculated total	14920
Process Emission Emission Factor Unit is required	11678
Process Emission Emission Factor is required	11678
Unit Process Control Device efficiency must not exceed 100% within a given sequence.	7199
The Release Point Stack Diameter, Flow Rate and/or Velocity are invalid.	6483
Process Emission Stack Test Date is required	4893
Control Device Pollutant Reduction Efficiency must be >= 5 and <= 99.99	3233
Process Emission Operations Actual Hours is required	2703
Control Device Pollutant Reduction Efficiency is required	2733
Process Emission Operations Average Days Per Week is required	1581
Process Emission Operations Average Hours/Day is required	1578
Process Emission Operations Average Weeks/Year is required	1551
Release Point Exit Gas Flow Rate or Exit Gas Velocity is required	1348

Validation Hits Breakdown



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Release Point Issues

6483 The Release Point Stack Diameter, Flow Rate and/or Velocity are invalid.

1348 Release Point Exit Gas Flow Rate or Exit Gas Velocity is required

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The Release Point Stack Diameter, Flow Rate and/or Velocity are invalid

- SLEIS validates the calculation for flow rate or velocity based on entered information.
  - Redbud did not validate these & DEQ QC didn't heavily focus on these.
- Many of these are likely historical inaccuracies that need to be corrected in 2019.
- SLEIS will auto-calculate as you fill in; you can overwrite these but they must pass validation.

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Release Point Exit Gas Flow Rate or Exit Gas Velocity is required

- One or both of these must be reported; can not be 0.
- SLEIS will auto-calculate these based off of entered release point parameters.

Control Device Issues

3233	Control Device Pollutant Reduction Efficiency must be >= 5 and <= 99.99
2733	Control Device Pollutant Reduction Efficiency is required

Control Devices

- Control devices are now a unique object in SLEIS
  - Previously, these were reported at the pollutant level
- Because of this, control devices were created in SLEIS based upon how they were previously reported in Redbud
  - Control devices were created for each process to ensure that all controlled emissions were associated with a control device.
- In reality, your facility likely has multiple processes leading to one control device.

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Control Devices *(cont.)*

- The newly created control devices will need cleaned up to match what is actually present at your facility
  - These will be critical validation errors that must be fixed before submission
  - To clean up, pollutants may need moved to appropriate control devices & excess control devices can be set to Permanently Shutdown

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Control Device Pollutant Reduction Efficiency must be >= 5% and <= 99.99%

- Control devices were often reported incompletely in Redbud with incorrect/missing efficiencies
- These must be reported within the 5%-99.99% range
  - The pollutants can be removed from the control device or moved to another control device if they shouldn't be associated with that device

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Control Device Pollutant Reduction Efficiency is required

- Similar to the previous issue; these are instances where no efficiency was reported
- It was previously acceptable that if the factor included the control efficiency, then no efficiency needed to be reported. That is *not* the case with SLEIS though. An efficiency must always be reported
- SLEIS will not save the page without an efficiency reported

Unit Process Issues

3233 Unit Process Control Device efficiency must not exceed 100% within a given sequence.

Unit Process Control Device efficiency must not exceed 100% within a given sequence

- This issue deals with control devices but is found on the Unit process page
- As seen earlier, control devices are now a stand-alone piece of equipment
- Control devices can now be set in sequence
  - This issue occurs when control devices are in sequence & their efficiencies add to >100%
  - If this were the case there would be no emissions; totally controlled
- Again, control devices will need cleaning up due to data migration

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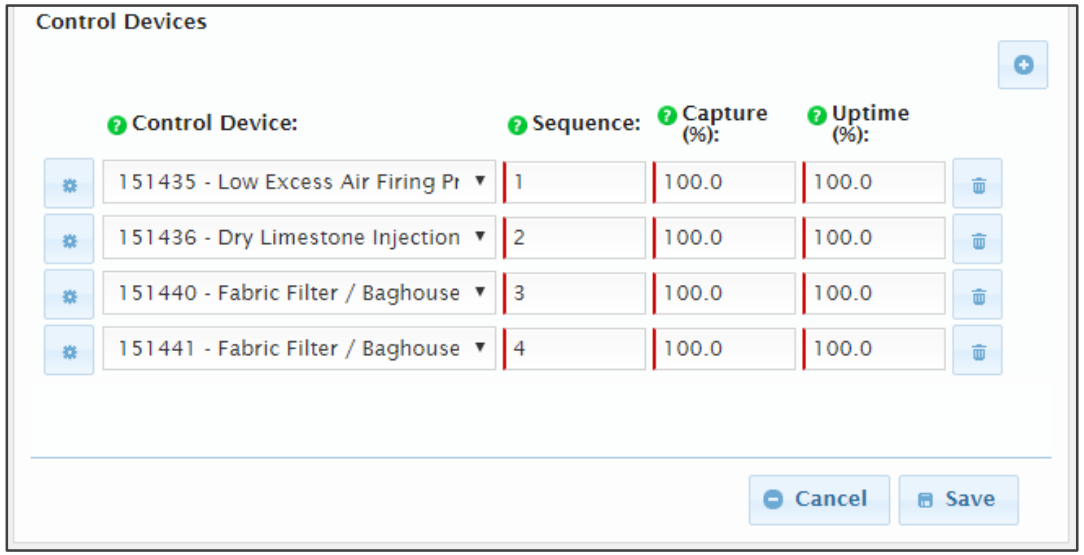
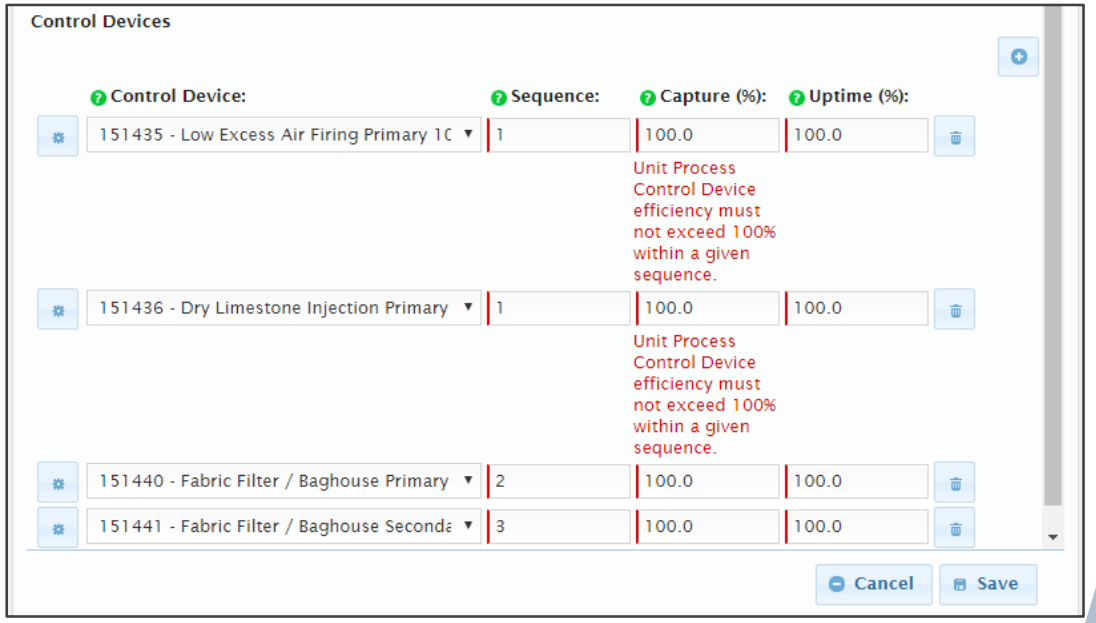
Unit Process Control Device efficiency must not exceed 100% within a given sequence *(cont.)*





OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Process Emissions Issues

- 14920 Process Emission Operations Actual Hours must be within 90%-110% of calculated total
- 2703 Process Emission Operations Actual Hours is required
- 1581 Process Emission Operations Average Days Per Week is required
- 1578 Process Emission Operations Average Hours/Day is required
- 1551 Process Emission Operations Average Weeks/Year is required
- 11678 Process Emission Emission Factor Unit is required
- 11678 Process Emission Emission Factor is required
- 4893 Process Emission Stack Test Date is required

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Process Emission Operations Actual Hours must be within 90%-110% of calculated total

- This is by far the most numerous issue
- SLEIS validates that average days/week, hours/day, & weeks/year calculate to match reported actual hours/year
- SLEIS will auto-fill the actual hours/year based on inputs
  - You can overwrite this but it must still pass validation
- You will not be able to save the process emissions information until the validation is satisfied

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Process Emission Operations Requirements

- Process Emission Operations Actual Hours is required
- Process Emission Operations Average Days Per Week is required
- Process Emission Operations Average Hours/Day is required
- Process Emission Operations Average Weeks/Year is required

Process Emission Operations Requirements *(cont.)*

- All 4 of these are related, they often occur together
- Must be reported; as mentioned earlier SLEIS will use entered values to calculate Actual Hours/Year
  - Again, you can overwrite this but still must be within the 90%-110% of calculated total
- If the process had no hours, uncheck the “Process Is Reported?” box

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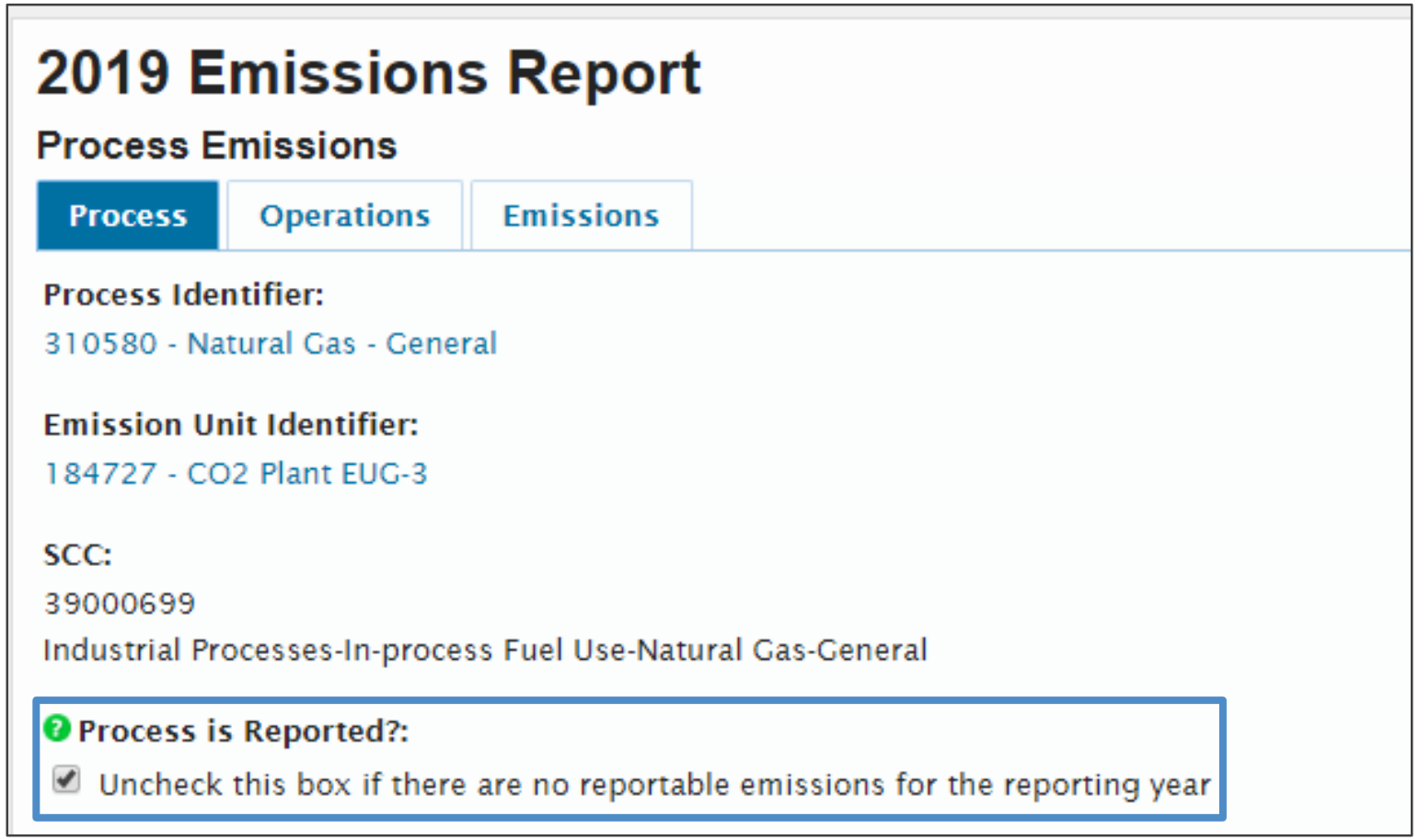
Process Emission Operations Requirements *(cont.)*



Process Emission Emission Factor Unit is required & Process Emission Emission Factor is required

- These two have the exact same number of hits because they occur in tandem
- Emission factors & units are required for certain calculation methods
- Emission factors & units are carried forward, so there will be some cleanup from when data was migrated into SLEIS
  - Also some issues from changes to requirements for different calculation methods
  - You will not be able to save the emissions page until these are corrected

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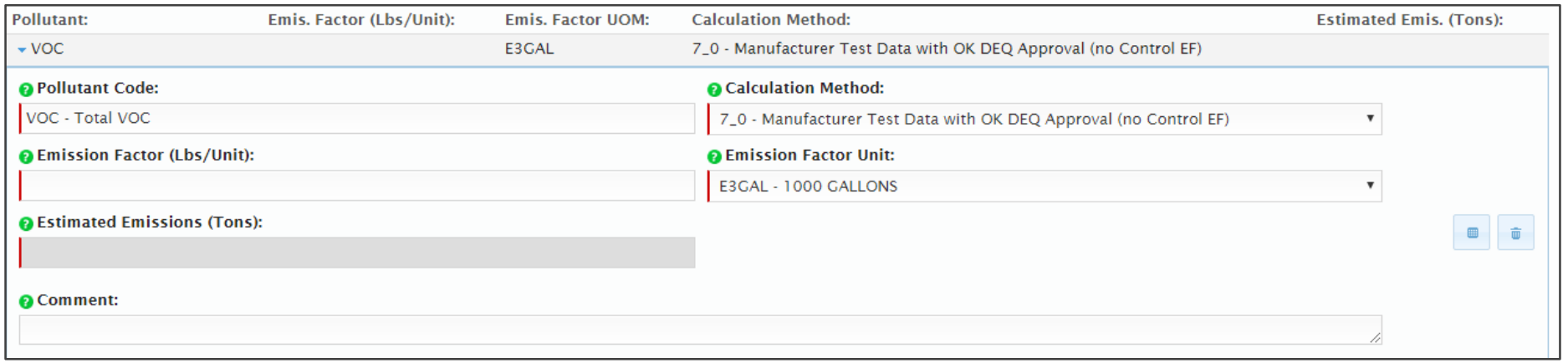

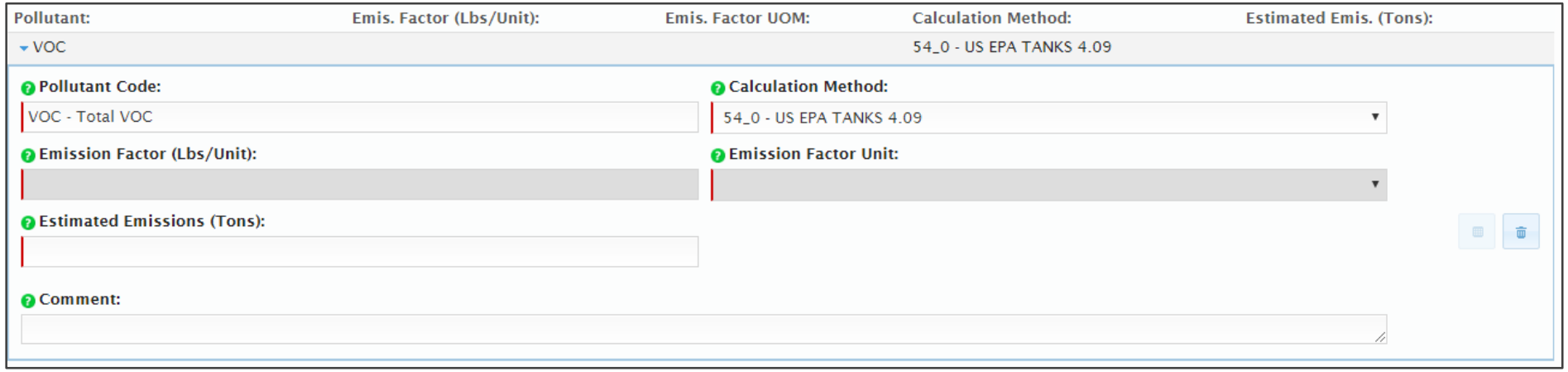

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Process Emission Stack Test Date is required

- This is a new field in SLEIS that did not previously exist
- When using a stack test emission factor, you must report the stack test date
  - You will not be able to save the process emissions page until this is done

Quality Control (QC) by DEQ Emissions Inventory Section

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Significant change in emissions from previous reporting year

- Often, we see emissions at an emission unit increase or decrease significantly without any significant changes in throughput or operating time
  - If you have excess emissions, then report them in your emission inventory
- We email companies to verify that the emissions are accurate and if so to explain the change in emissions
  - Typos are often encountered in this check
- Providing a detailed note helps us validate these situations!

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“DEQ Approved Method”

- “DEQ Approved Method” should only be selected if no other calculation method is applicable
- A comment should be added to instances where “DEQ Approved Method” is chosen
- Remember, you have to get DEQ approval before selecting this method!

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HAPs & Total VOC

- Volatile Organic Compounds (VOCs) are organic compounds that contain carbon and react in the presence of sunlight with NOx to form ozone
- Hazardous Air Pollutants (HAPs) are compounds that have been included on EPA's list of 187 pollutants that can have a detrimental effect on humans and the environment
  - Many HAPs are also VOCs
  - Both HAPs and Total VOC must be reported
  - You will not be double billed

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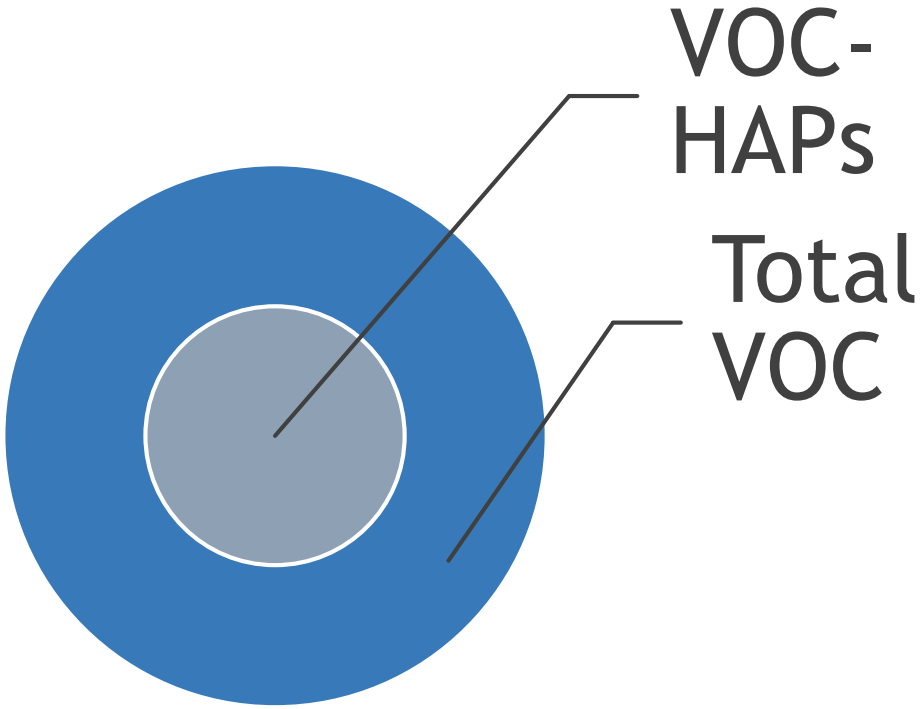
HAPs & Total VOC *(cont.)*

- Total VOC amount should be greater than or equal to the total of the individual HAPs



Inconsistent Status

- If an emission unit is Operating…
  - Annual process rate & annual operating hours cannot be 0
- If an emission unit is Temporarily/Permanently Shutdown…
  - Annual throughput, actual hours/year, & estimated emissions must all be 0
- If the equipment ran more than 0 hours at *any point* in the year status *must* be Operating!!

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Inconsistent Status *(cont.)*

- Status Date
  - *"When the emission unit/release point/control device status was last set. The status date is not a required field when the status is operating. If the emission unit operated at all during the current calendar year then the emission unit needs to be reported, and the status date for the temporarily or permanently shutdown designation will be January 1st of the next calendar year. For example an emission unit that stops operating in June of 2018 will report a status date of January 1, 2019 in the 2019 emission inventory."*
- Last/Final Emissions Year
  - *"The last/final year that this process will ever be reported. If the process operated at all during the current calendar year then the process needs to be reported, and the last inventory year will be the next calendar year. For example a process that stops operating in June of 2018 will have a 2019 last inventory year."*

Reporting the same throughput, annual hours, & emissions as the previous year

- For most emission units the throughput, annual hours, & emissions should vary from year to year
  - Emissions may be quite similar but not exact
- Some emission units like emergency engines that are tested on a regular schedule may have the same values

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Produced Water Tank Emissions

- Permits may not reference produced water tanks
- If VOC emissions are greater than 0.1 tons, the produced water emissions must be reported
- To calculate produced water emissions:
  - The volume of produced water can be entered into the TANKS program as if it were condensate/crude oil
  - 1% of the resultant value can be utilized as the produce water emissions

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New/Existing Equipment

- Your inventory should be an accurate reflection of the equipment at your facility
- Be sure to add new equipment when appropriate
  - New equipment should be created from scratch
  - Do not convert an existing emission unit to a new piece of equipment; equipment is tracked historically

Amendments

How do I amend my inventory?

- Amendments are now done in SLEIS
  - Can be requested at anytime during the year
  - Inventories from 2013-2018 are loaded into SLEIS
- SLEIS roles still apply
  - Must be Editor or Submitter to request amendment
  - Must be Submitter to submit

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How do I amend my inventory? *(cont.)*

- On each report year page, click the “Request Amendment” button on the right
- Please include reason for amendment, if you are adding previously unreported equipment & if the amendement stems from an enforcement case/inspector
  - Equipment should have the same unique identifier in each year, DEQ staff will have to correct this
- If granted, you will receive an email & can then make any needed changes and resubmit the report

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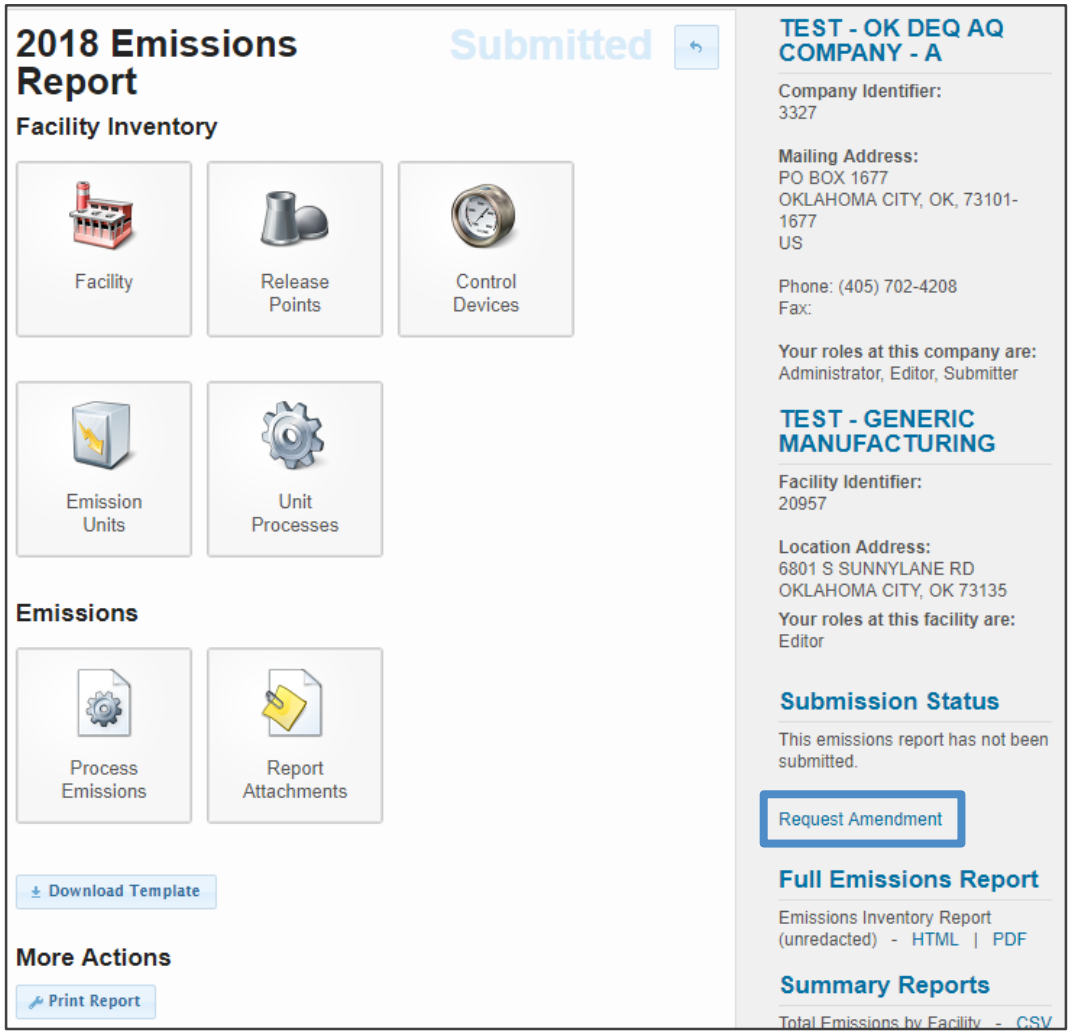
How do I amend my inventory? *(cont.)*



Your inventory is important!!

- Missing or incorrect release point data leads to errors in geographical location of emissions and impacts photochemical modeling and health risk assessments.
- Missing or incorrect hours and season percentages lead to errors in temporal distribution of emissions.
- Errors in SCCs and SICs impact control strategy development and attainment plans.
- Missing or incorrect control equipment data impacts rule development.
- Good data leads to effective air quality regulation!

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Questions?

- Contact us at:
  - aei@deq.ok.gov
  - (405) 702-4100

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