E-ENTERPRISE for the environment

Modernizing the business of environmental protection

Combined Air Emissions Reporting System (CAERS)

Reporting Control Devices in CAERS

04/14/2021

Updated 4/20/2021 before posting

Housekeeping:

- This training is being recorded
- Everyone muted, please don’t put us on hold
- Type your questions in the chat box
- PPT and recording will be made available on the CAER website

Disclaimer

This training is intended for instructional purposes only. Any data or facility information shown in the training, is illustrative only, and should not be confused with a facility's live report for any given inventory year.

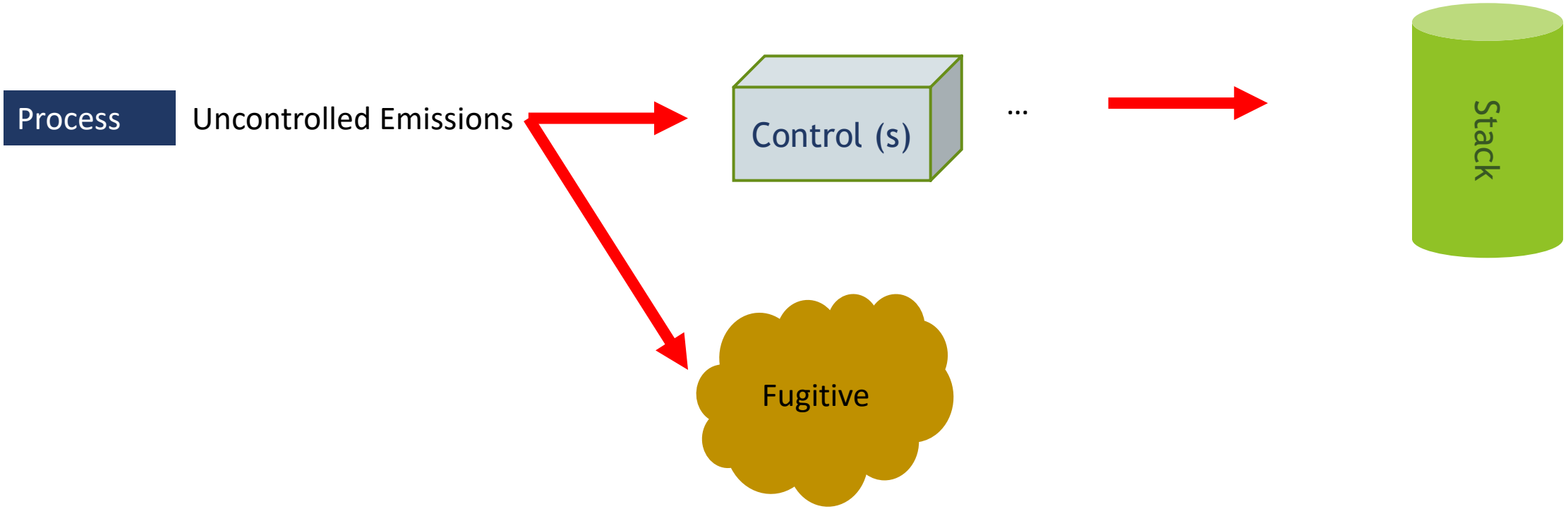
Outline of Training

- New “Path” Approach Concepts
- Examples & How to Enter Data for:
  - No Controls
  - One Control Device
  - More than One Control Device
- Questions & Answers

New “Path” Approach Concepts

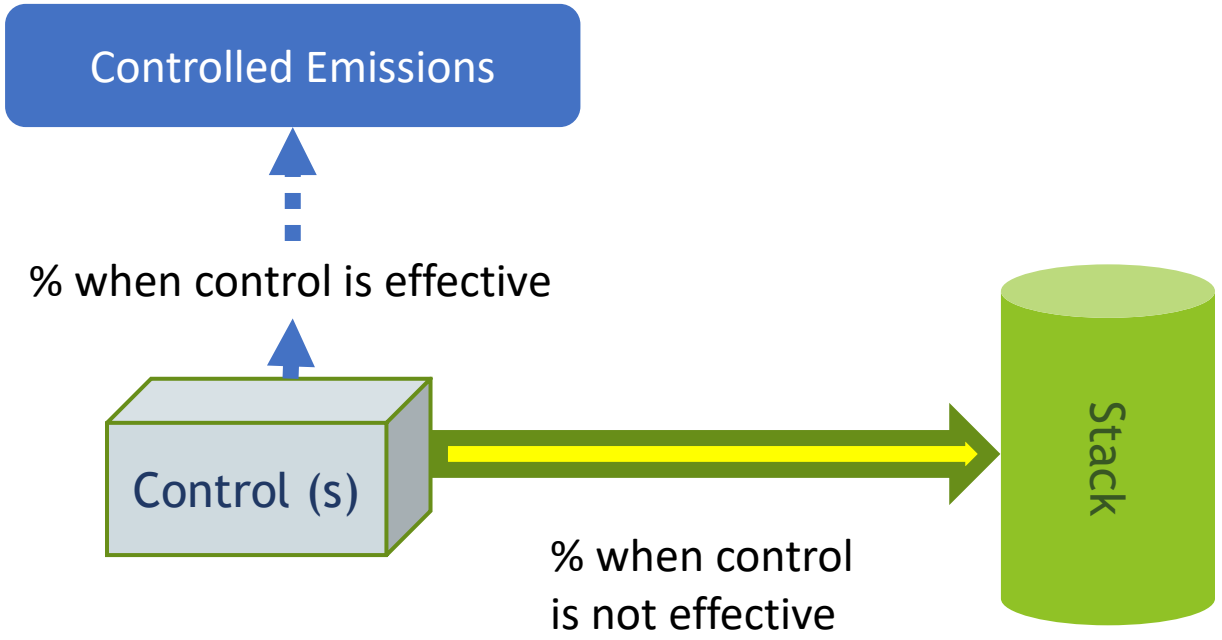
Basic Definitions: Release point apportionment

Percent release point apportionment: The percentage of an exhaust gas stream that is actually collected for routing to a set of control devices. This value could be obtained from the vendor, or measured at the facility. Previous terminology: Percent capture efficiency. Percent captured = Percent going to "stack" type release points. Percent not captured = percent going to "fugitive" release point.



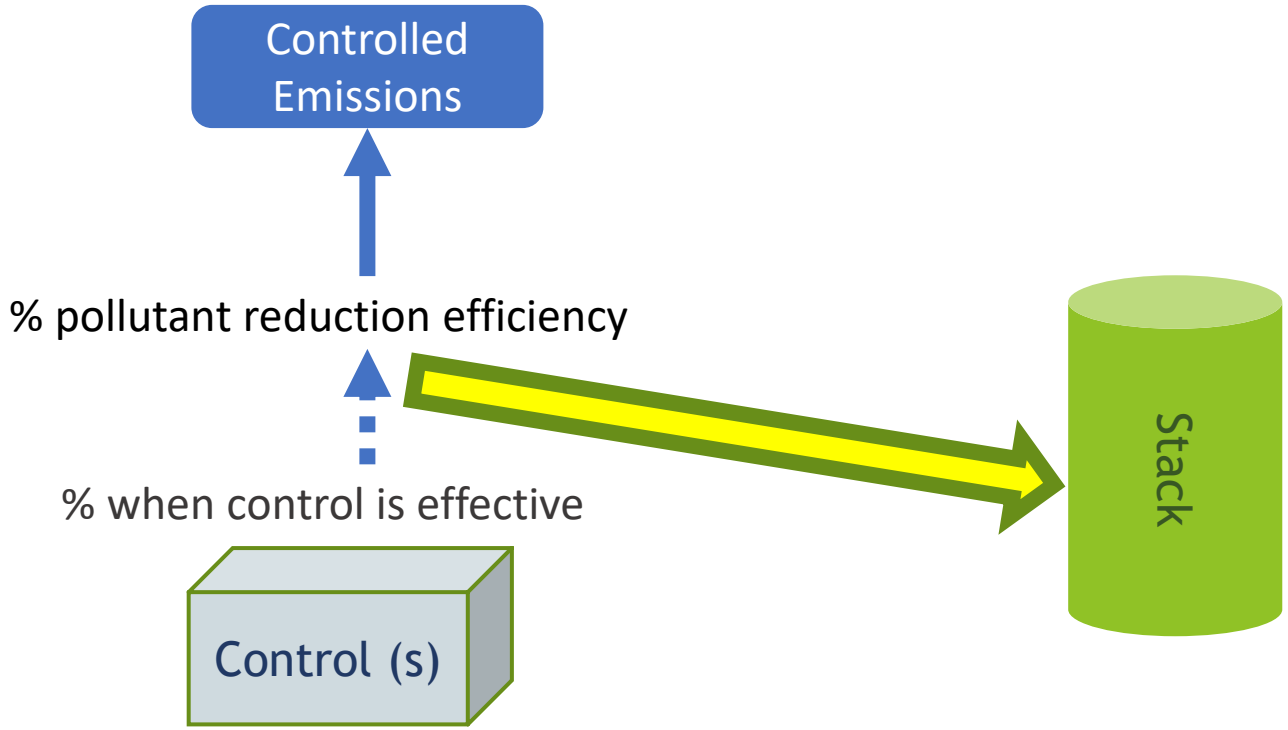
Basic Definitions: Percent Control Effectiveness

Percent control effectiveness: The percentage of time or activity throughput that a control approach is operating as designed, including the capture and reduction devices. This percentage accounts for the fact that controls typically are not 100 percent effective because of equipment downtime, upsets and decreases in control efficiencies. This could be estimated from the amount of time the control is operational, versus down for maintenance or repairs. When the control is not effective, the pollutant is not removed from the emissions stream.



Basic Definitions: Percent Pollutant Reduction Efficiency

Percent Pollutant Reduction Efficiency: The percent reduction achieved for the pollutant when all control measures are operating as designed. This could be obtained from the vendor.



Previously - “Approach Method”

Approach: Contained a collection of controls applied to a unit or process.

- Could contain:
  - Multiple control measures (scrubber, precipitator, etc.), some controls listed could be a “group” of controls
  - Multiple pollutants being controlled with an overall % reduction efficiency reflecting *all* of the control devices in the control approach
  - ❖ Implicit is that every measure controls every pollutant (which we know is not true)
- Overall % capture efficiency, and % effectiveness
- Allowed us to show the overall reduction % for a given process – pollutant - release point combination, but not at individual control level

Previously – “Approach Method”

We *couldn’t*:

- Describe controls configuration at a facility
- Define the relationship between controls and units, process, and / or release points
- “Reuse” controls that are shared with other components (units, processes, and release points) – i.e. had to enter an approach containing the relevant control for each unit/process/release point combination
- Change the property values of the control information with ease

Previously – “Approach Method”

We *couldn’t*:

- Describe controls configuration at a facility
- Define the relationship between controls and units, process, and / or release points
- In reporting data, “reuse” controls that are shared with other components (units, processes, and release points) – i.e. had to enter an approach containing the relevant control for each unit/process/release point combination
- Change the property values of the control information with ease

New – “Path Method”

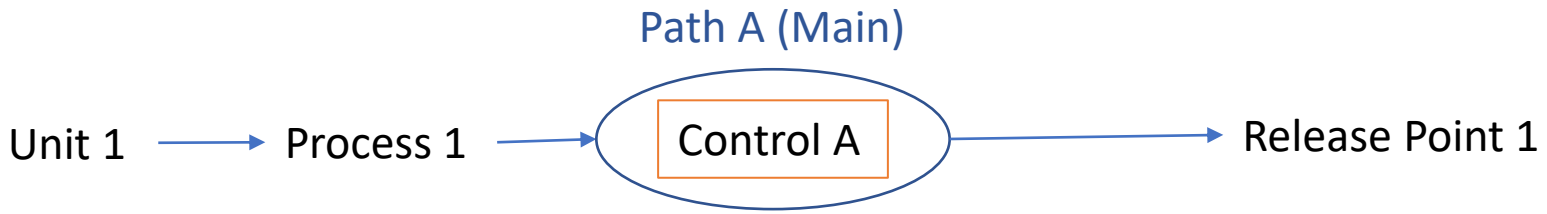
- A list of individual controls exist for the facility
- Only the pollutants controlled by each individual piece of control equipment are listed with the control. The % reduction for the pollutant is the amount reduced due to this one piece of equipment.
- Control configuration is defined:
  - Single
  - In series
  - In parallel
  - Combinations
- Controls are placed in paths and can be:
  - “Reused” in reporting
  - Associated and linked between a unit/process and a release point

New – “Path Method”

- A **Path** contains:
  - One or more controls that are connected
  - A *child* path contains:
    - one or more controls
    - a “smaller” child path containing one or more controls
- A *Main* Path contains:
  - One or more controls or children paths
  - Associates the controls/paths it contains from a unit/process to a release point

Single Control

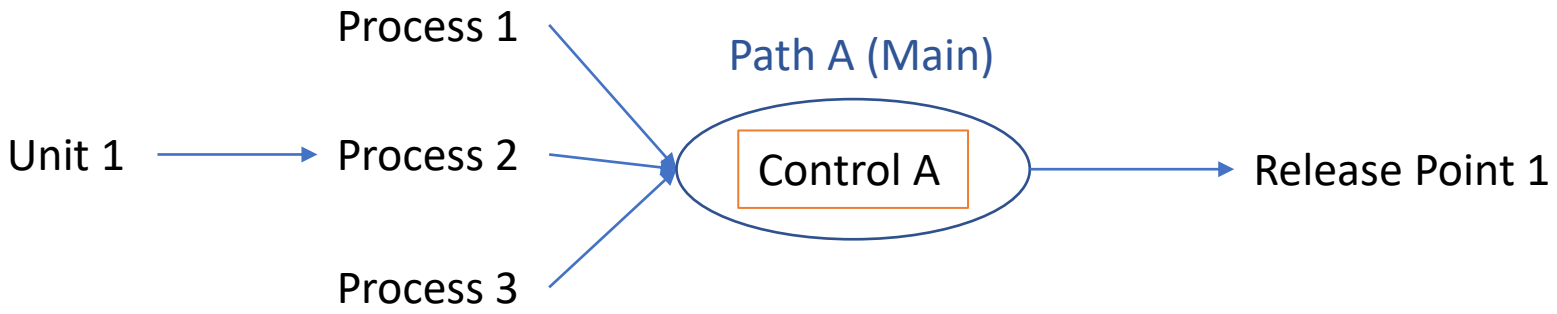
For a single control one path is needed. The control is placed in that path. That path will be the main path and it will associate the process to the release point. Because there's only one control, path assignment is just equal to 1.



Need: pollutant reduction efficiency, effectiveness of control, release point apportionment, path assignment = 1, control apportionment = 100%.

Single Control on Multiple Units/Processes

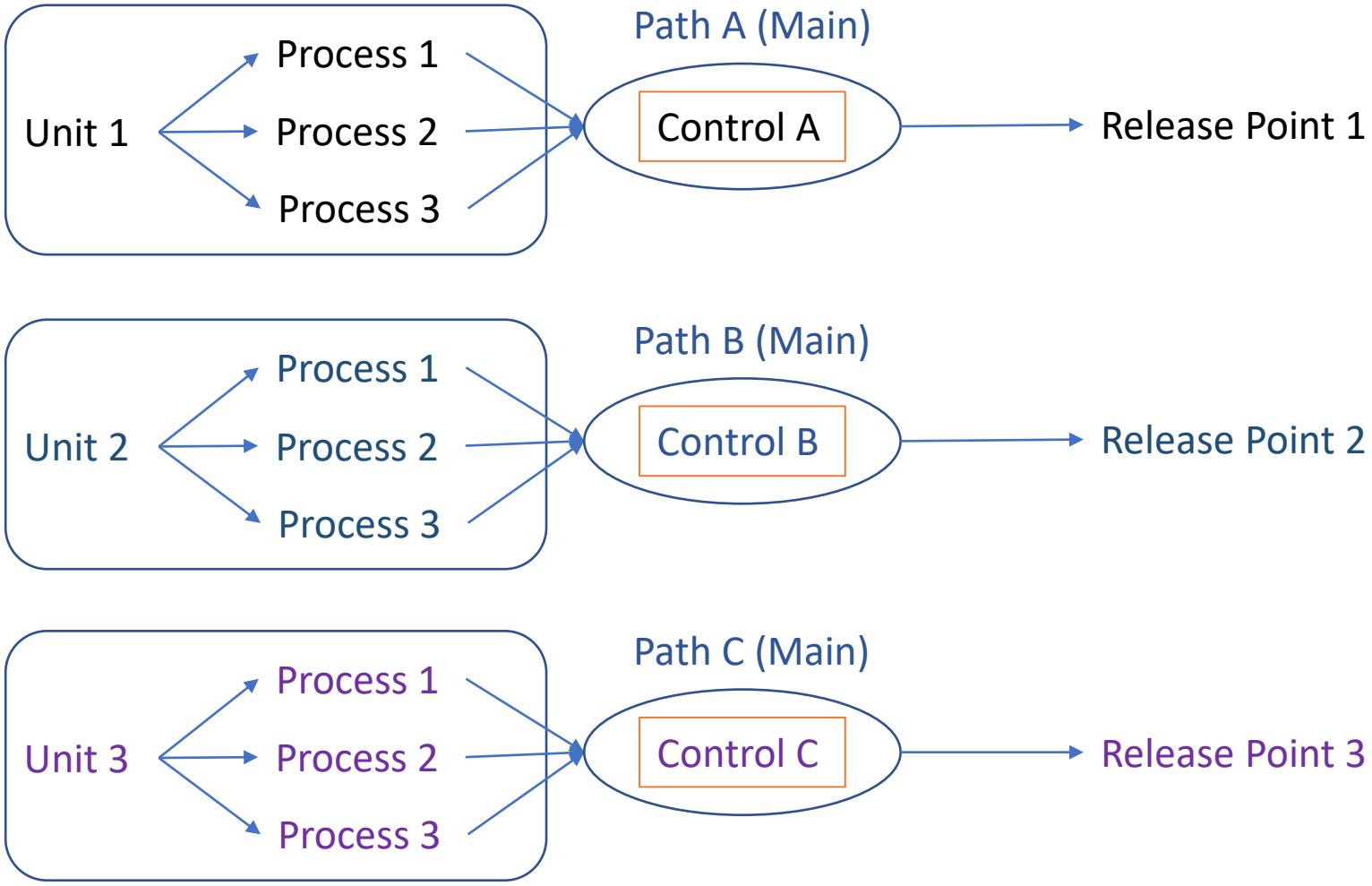
Note that once this path is created for a single control, any process sending emissions to the same release point can use that path. So you only have to set that path up once, then reuse it as needed for each process.



Old Approach method would have required creation of one approach per unit/process/release point combination. New path method "reuses" Path A.

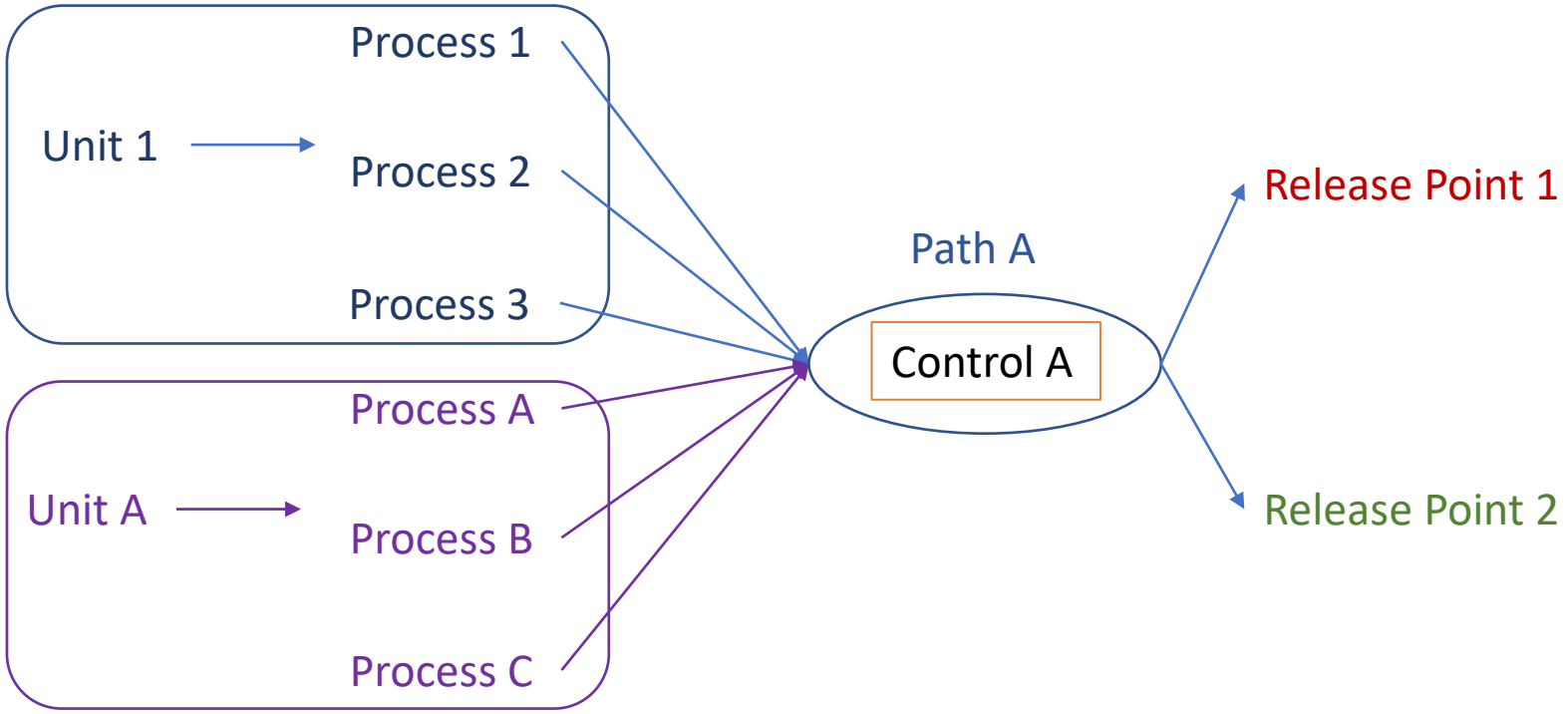
Need: pollutant reduction efficiency, effectiveness of control, release point apportionment, path assignment = 1, control apportionment = 100%.

Multiple “Single Controls”



The case of multiple controls that are “single” controls between a unit/processes and release point is the same as for a single control. One path is created for each control and each path associates the unit/process with the respective release point.

Single Control on Multiple Units/Processes/Release Points

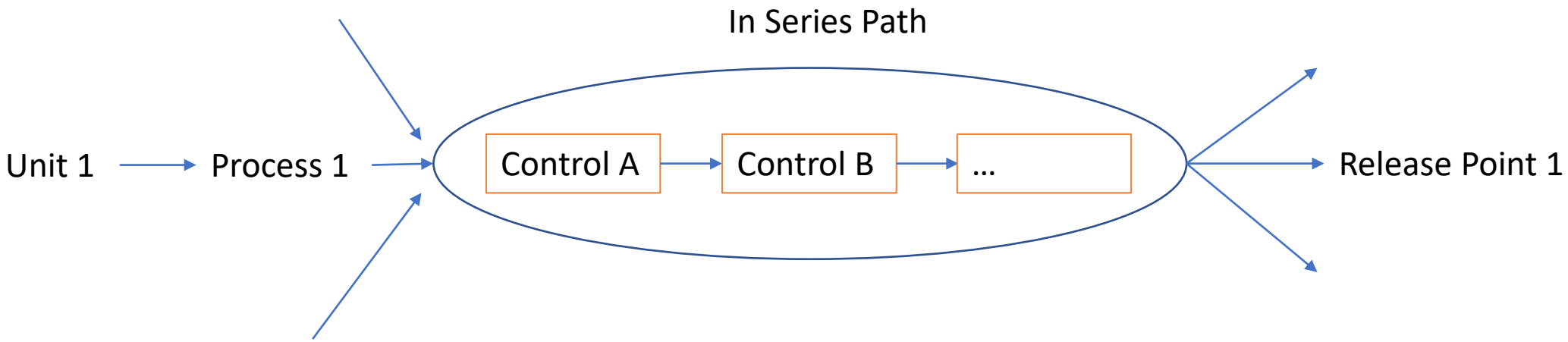


A path can be shared by units/processes if they all direct their emission through the control(s) in that path and also “share” release points

Old Approach method would have required creation of one approach per unit/process/release point combination (6 approaches). New path method “reuses” Path A.

Multiple Controls – In Series

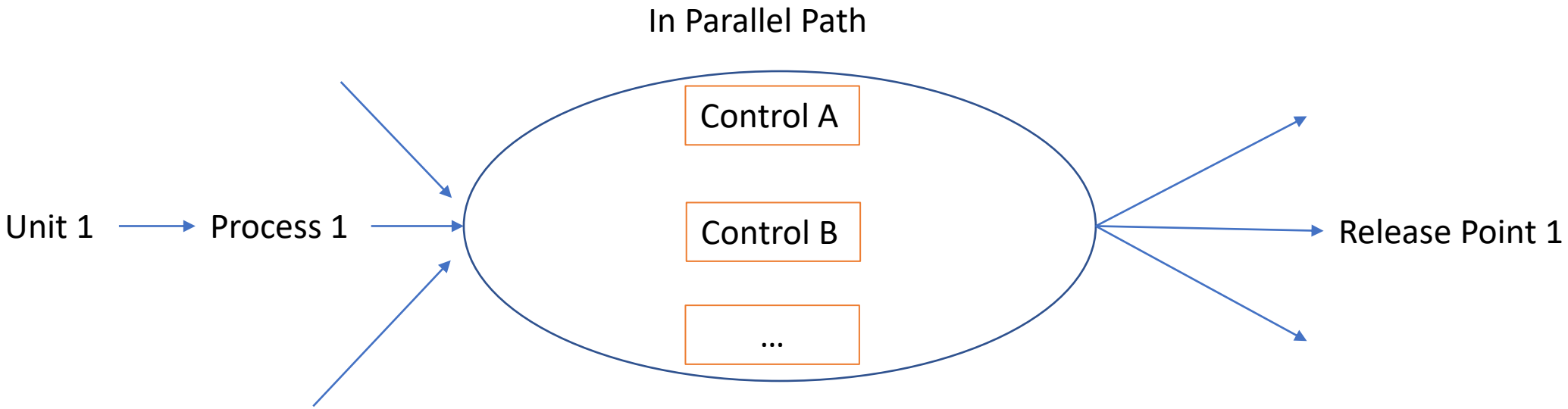
Multiple controls in series can be placed in on path and that path can be reused if it is the main path, as in the previous slide. Instead of a single control, now we have several in series.



Need: pollutant reduction efficiency, effectiveness of control, release point apportionment, *path assignment* (position of control in the sequence; control A=1, Control B=2,…), control apportionment = 100%.

Multiple Controls – In Parallel

Multiple controls in parallel can be placed in on path and that path can be reused if it is the main path, so long as it associates units/processes with the same release point(s).



Need: pollutant reduction efficiency, effectiveness of control, release point apportionment (capture efficiency), path assignment (position of control in the sequence, if parallel, all controls have the same sequence number), control apportionment (e.g. 30% per control).

Additional Definitions

- A **Path Assignment** defines the order in which controls are configured, each control or child path is given a sequence number:
  - Increasing “sequence number” if in sequence
  - The same “sequence number” if in parallel
- Ultimately, there will be a parent or “master” path that will define the controls that are encountered from the emissions generation point (unit/process) to the release point.
  - Movement of emissions from one control to the next will be tracked via the **Control Apportionment**
  - Capture of the emissions will be tracked via a **Release Point Apportionment**

Additional Definitions

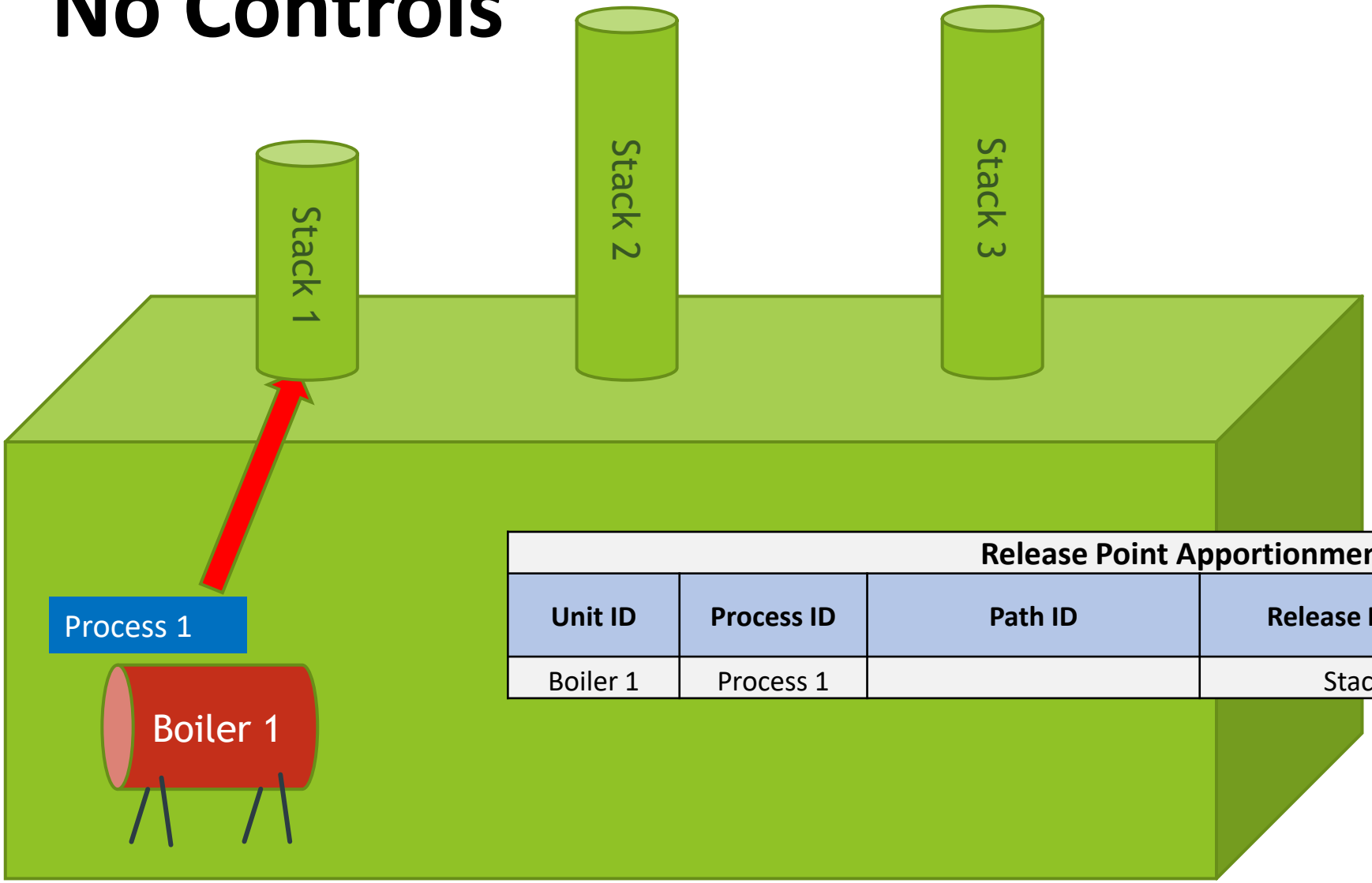
- **Control Apportionment:**
  - % of the emissions that are coming from a previous control or path
  - 100% of the emissions are tracked, a control apportionment percentage < 100% for a control means that some emission are also being routed to another control device or path.
- **Release Point Apportionment:**
  - Emissions generated at the unit/process must be accounted for in terms of where they ended up being released:
    - Different types of release points
      - Stack
      - Fugitive
    - 100% of the original emissions must be assigned to one or more release points

Examples & How to Enter Data

General Steps

- Enter control data (pollutant and % pollutant reduction efficiency)
- Place the control into a path (assignment or sequence #, control apportionment)
  - Control into path
  - Child path into parent path
  - Controls and/or children paths into a main path
- Apportion emissions from the process to the release point

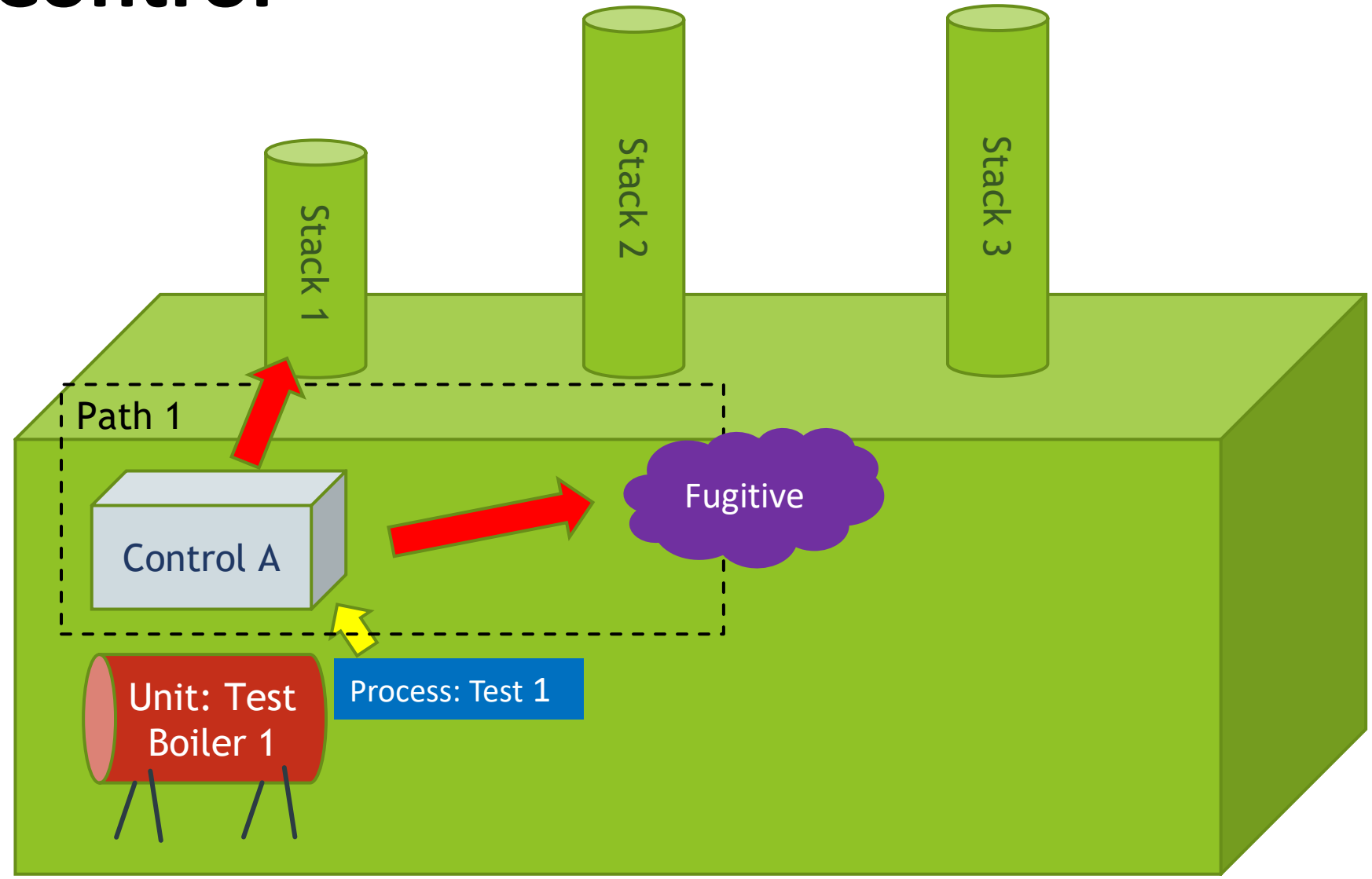
No Controls



Release Point Apportionment				
Unit ID	**Process ID**	**Path ID**	**Release Point ID**	**Release Point Apportionment**
Boiler 1	Process 1		Stack 1	100%

No path needs to be created. You would note a percentage going to stack and a percentage going to fugitives if some of the emissions from the process are fugitive.

One Control

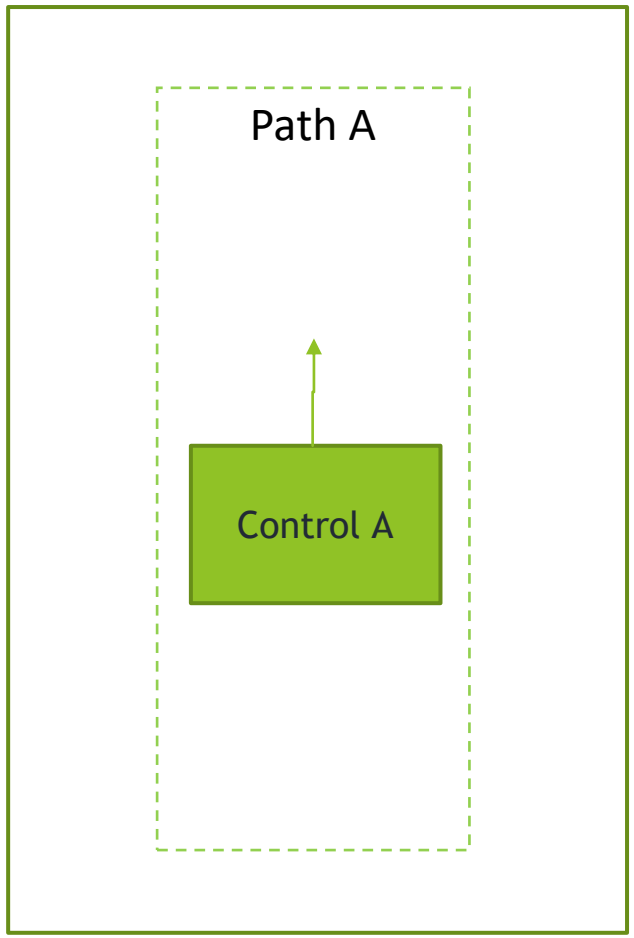

Stack 1
Stack 2
Stack 3
Path 1
Control A
Fugitive
Unit: Test Boiler 1
Process: Test 1

Numerical Example for One Control

Old Approach Method

Unit ID	Process ID	Control Applicability Level	Control Description	% Capture	% Effectiveness	Control Comment	Pollutant	% Reduction Efficiency
Test Boiler 1	Test 1	PROCESS	Control A	85%	97%	Control approach	NOX	90%

New Path Method



Control Data

Control ID	% Effectiveness	Pollutant	% Efficiency	Overall % Reduction
Control A	97%	NOX	90%	74%

Path Data

Path ID	Sequence Number	Assignment (Control or Path)	Apportionment (Control or Path)
Path A	1	Control A	100%

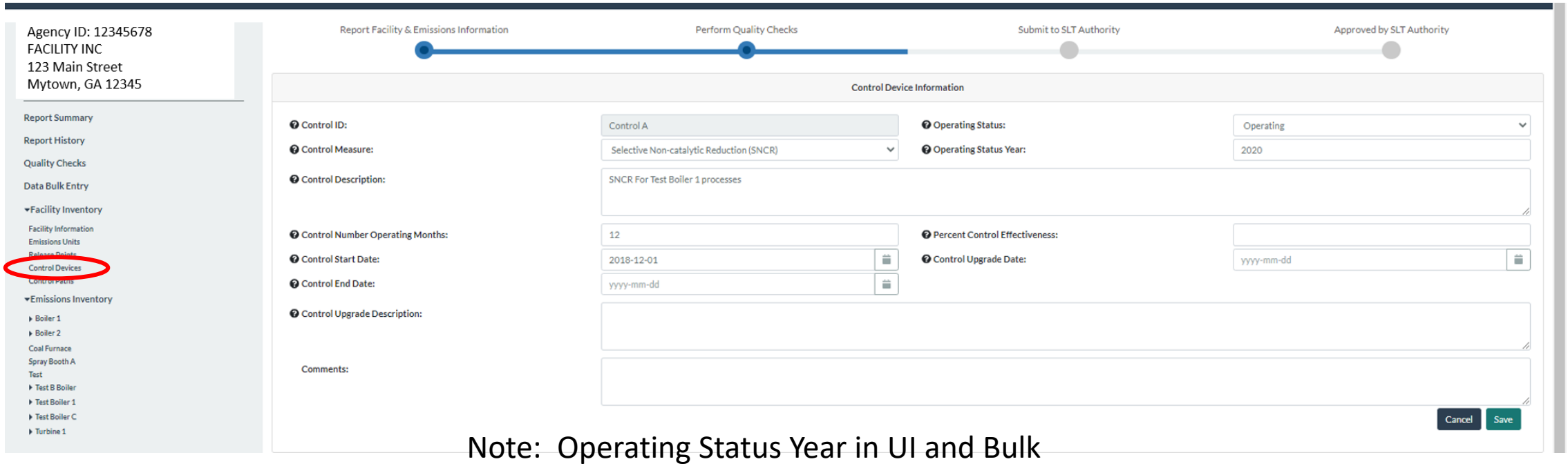
Release Point Data

Unit ID	Process ID	Path ID	Release Point ID	Release Point Apportionment
Unit 1	Process 1	Path 1	Stack 1	85%
			Fugitive	15%

E.g. Overall% Reduction = apportioned to stack * effectiveness * efficiency = 85% * 97% * 90% = 74.21%

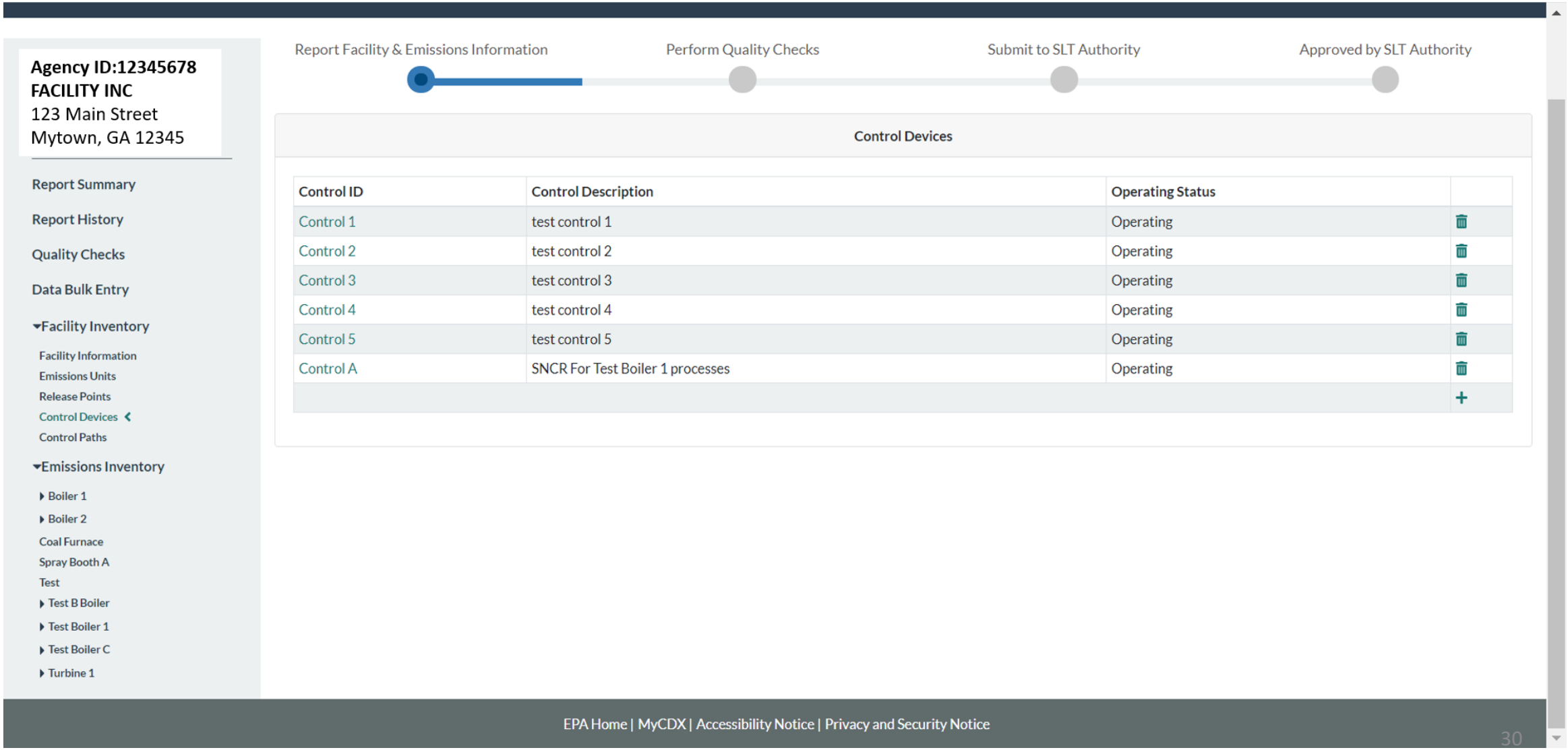
One Control in User Interface

Add New Control in Controls Devices List

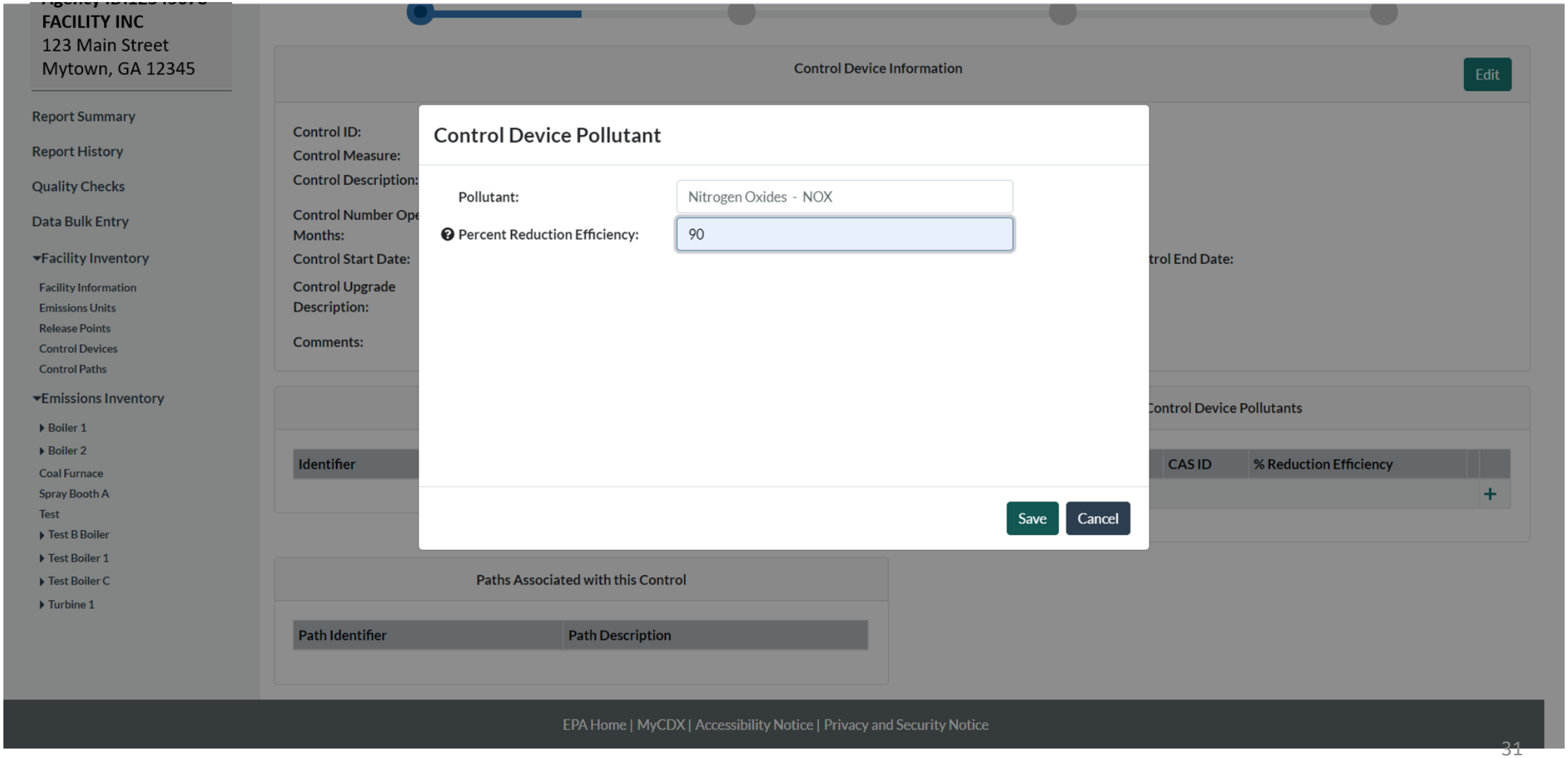


Note: Operating Status Year in UI and Bulk Upload starting next Monday

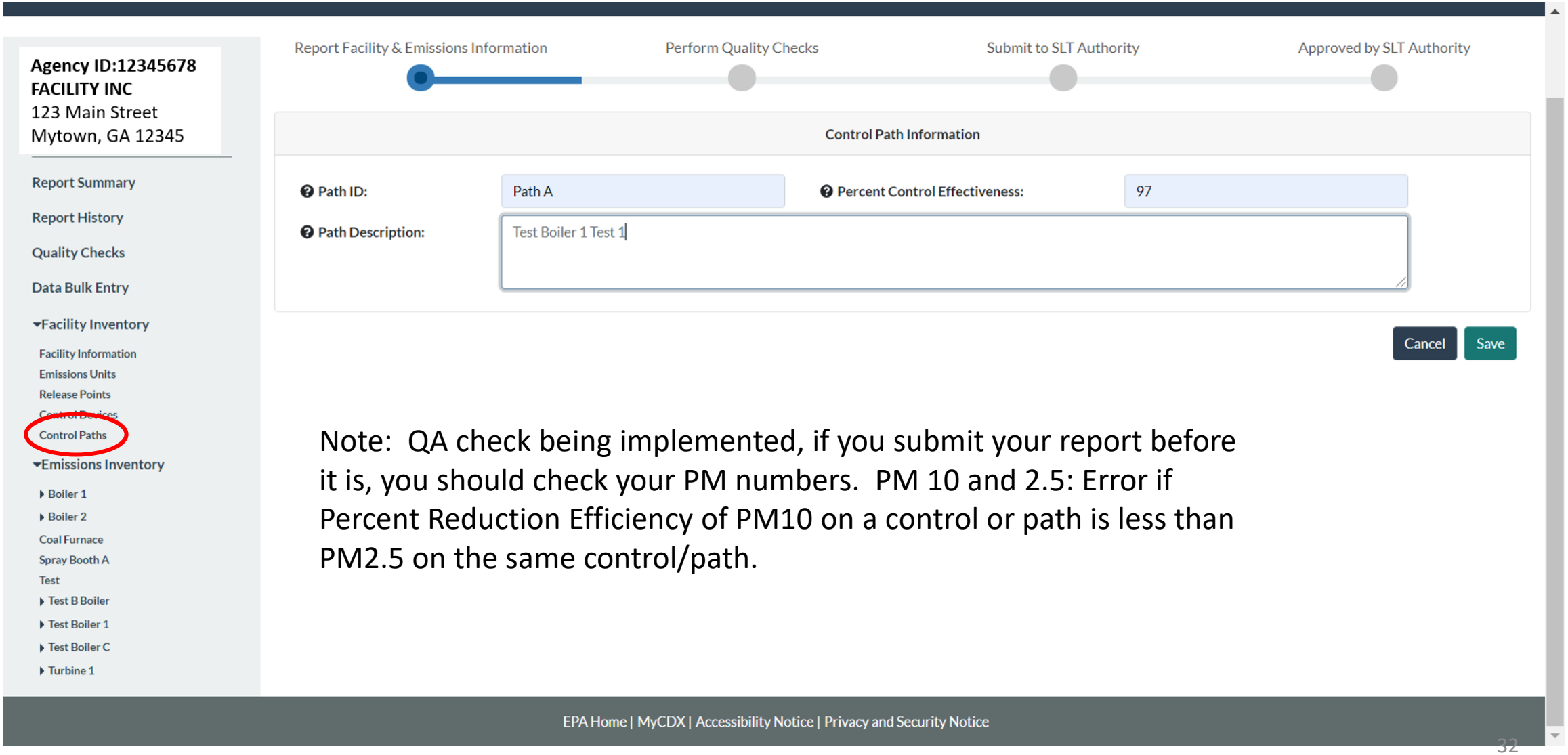
See New Control in List of Controls



Select Control and Add Data

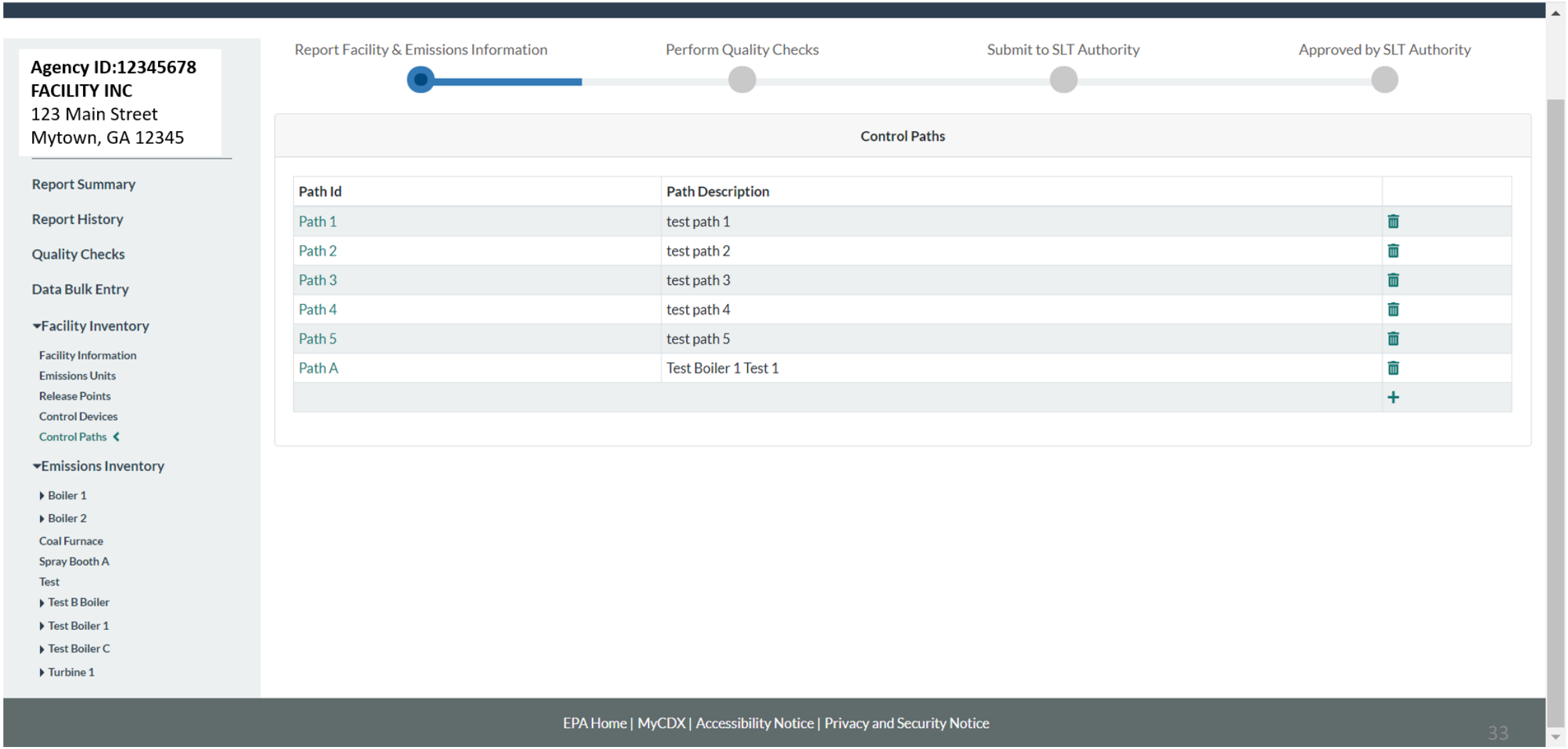


Create Path for Control in Path List

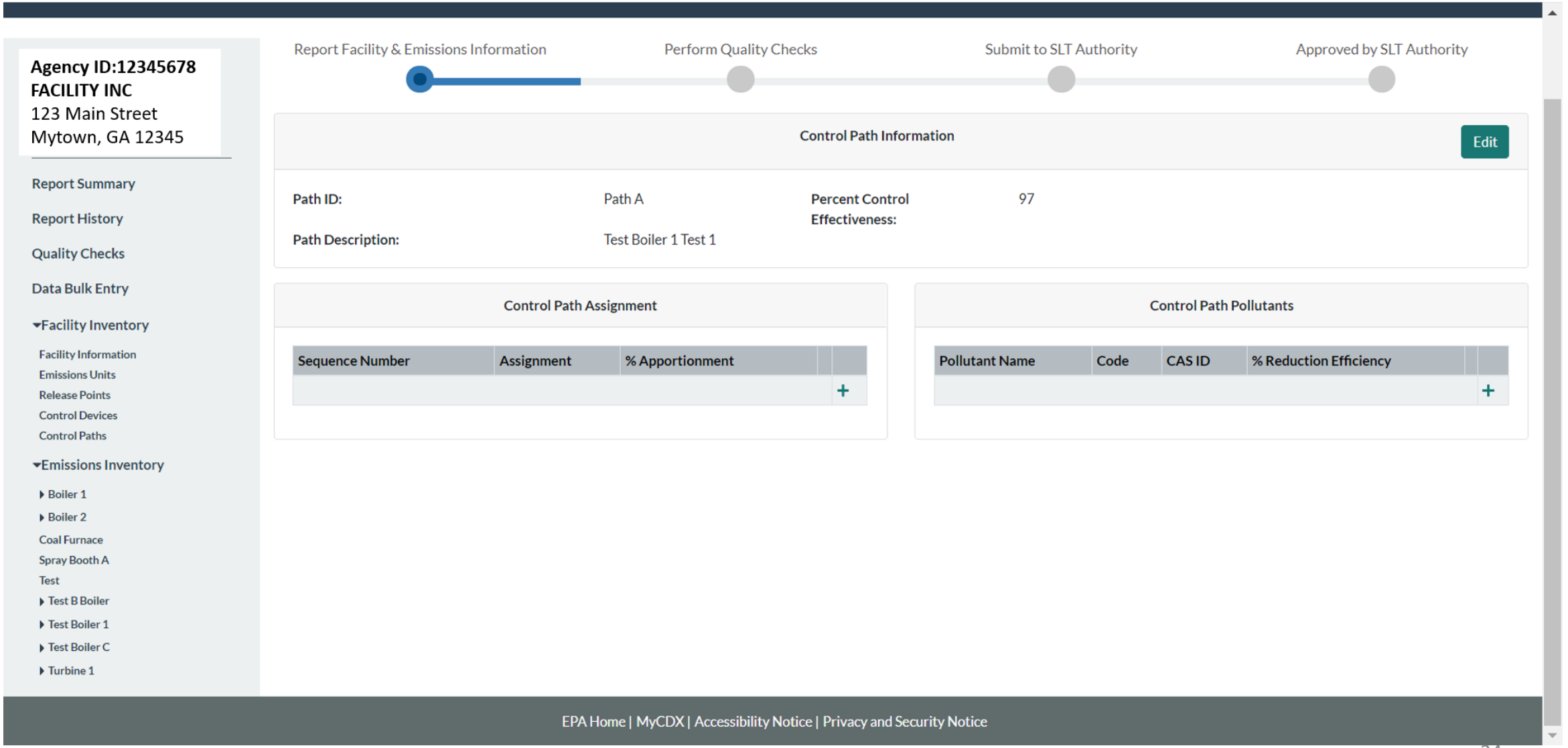


Note: QA check being implemented, if you submit your report before it is, you should check your PM numbers. PM 10 and 2.5: Error if Percent Reduction Efficiency of PM10 on a control or path is less than PM2.5 on the same control/path.

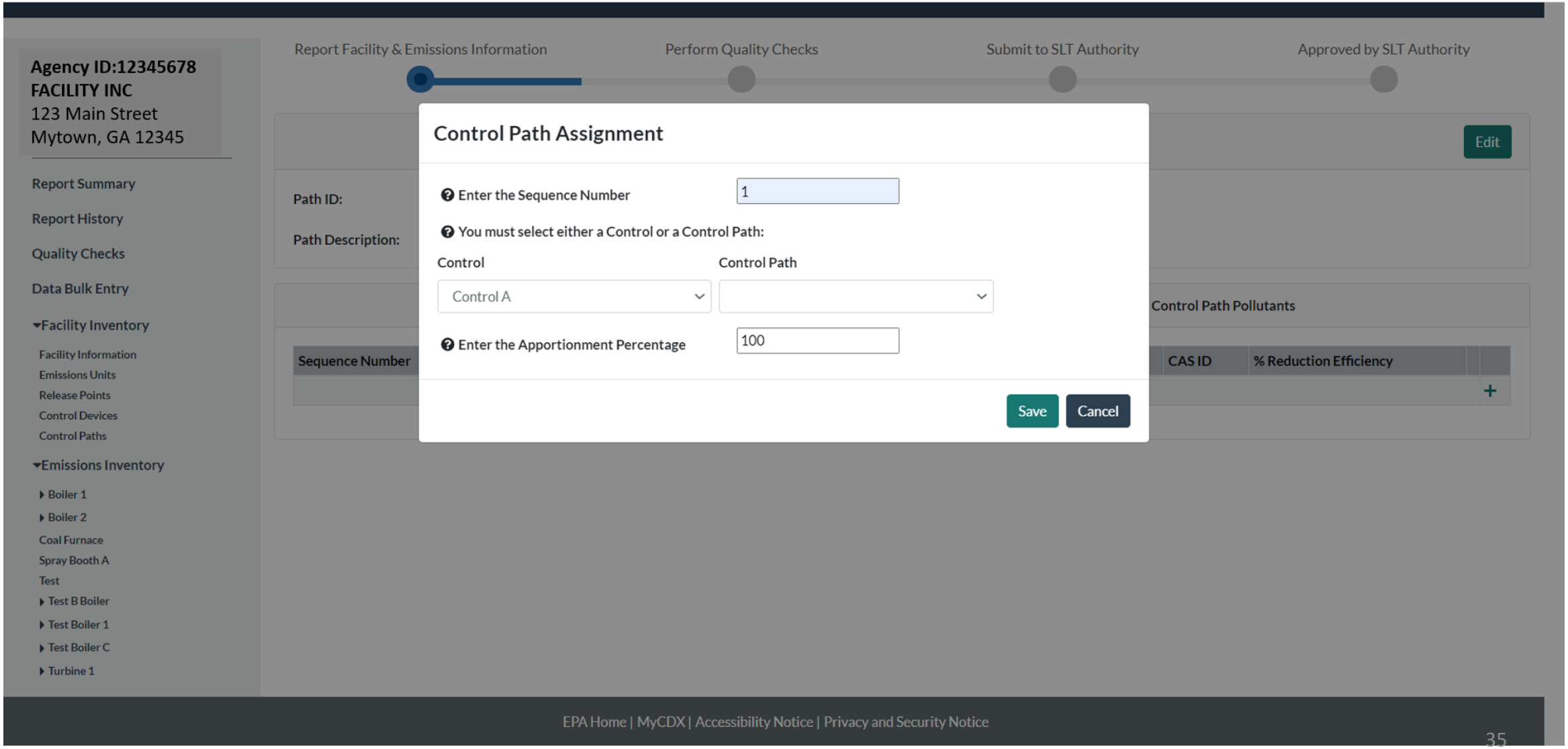
See New Path in List of Paths



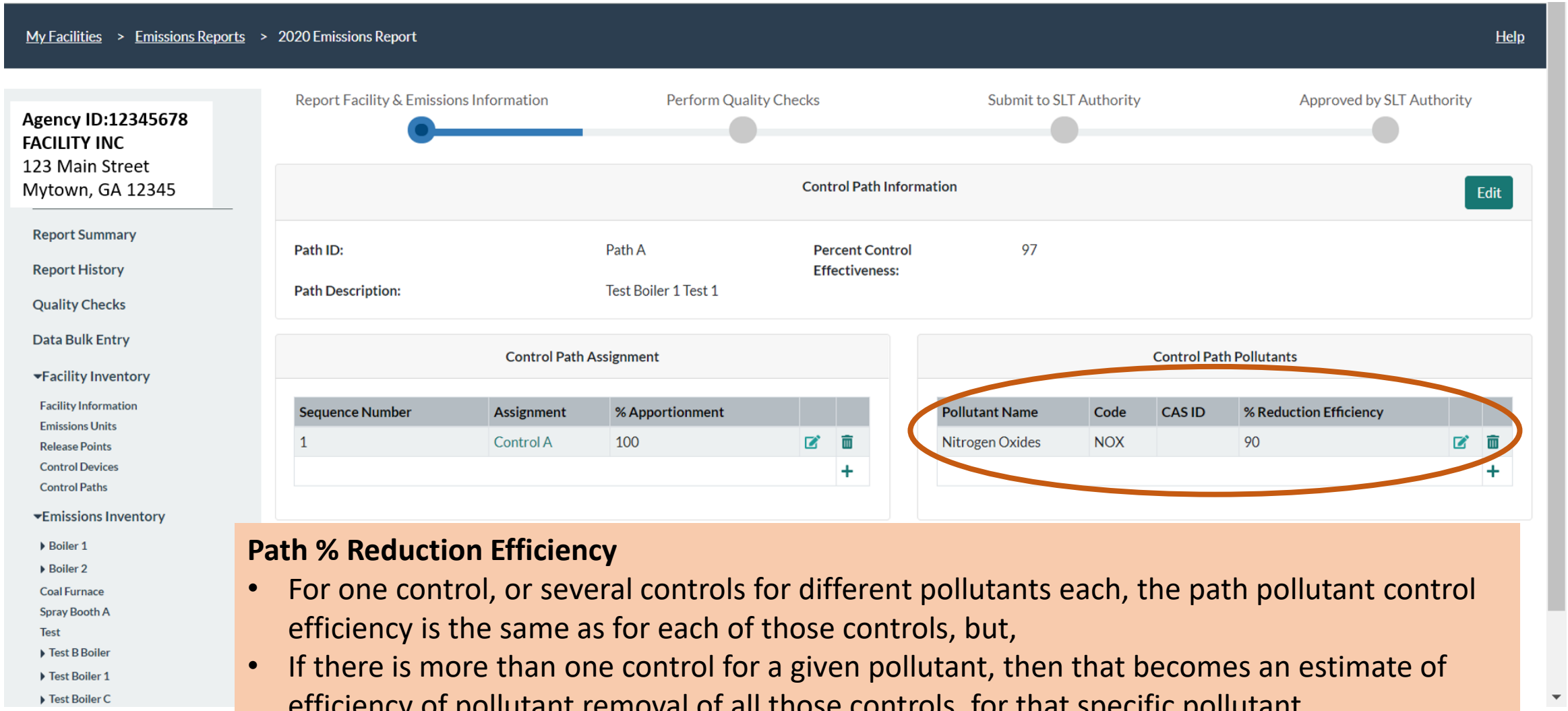
Select Path and Add Data



Control Path Assignment Data



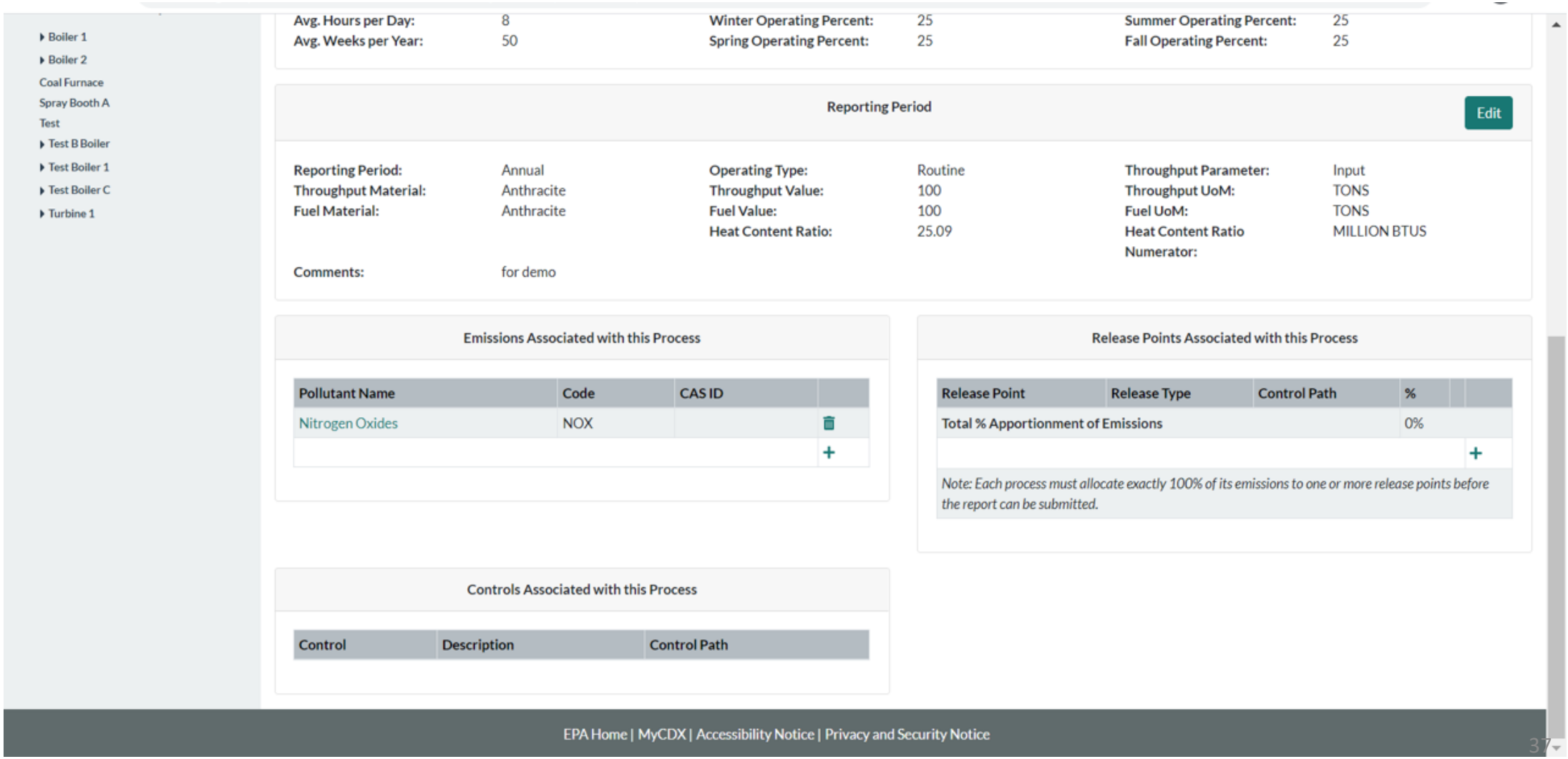
Control Path Pollutants



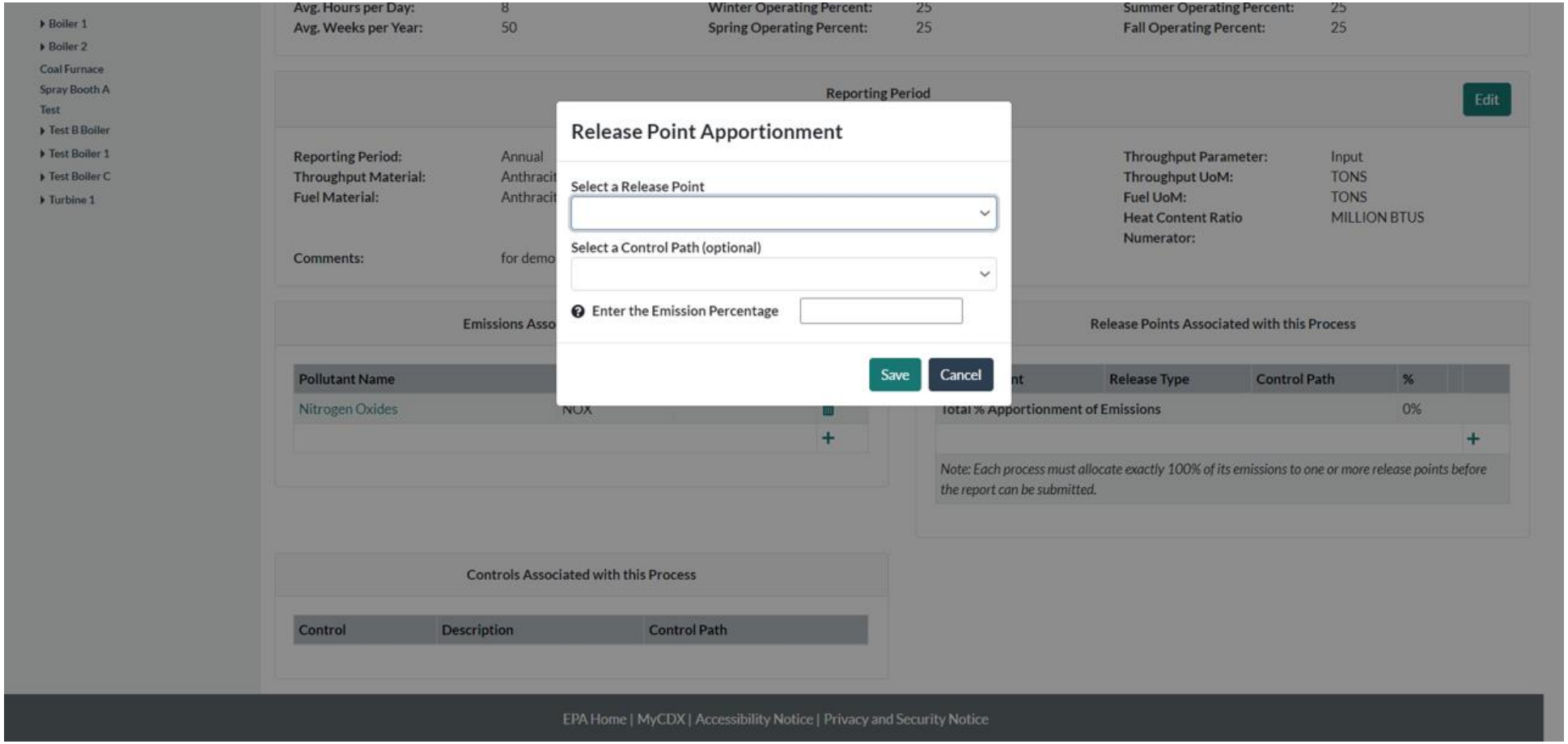
Path % Reduction Efficiency

- For one control, or several controls for different pollutants each, the path pollutant control efficiency is the same as for each of those controls, but,
- If there is more than one control for a given pollutant, then that becomes an estimate of efficiency of pollutant removal of all those controls, for that specific pollutant.

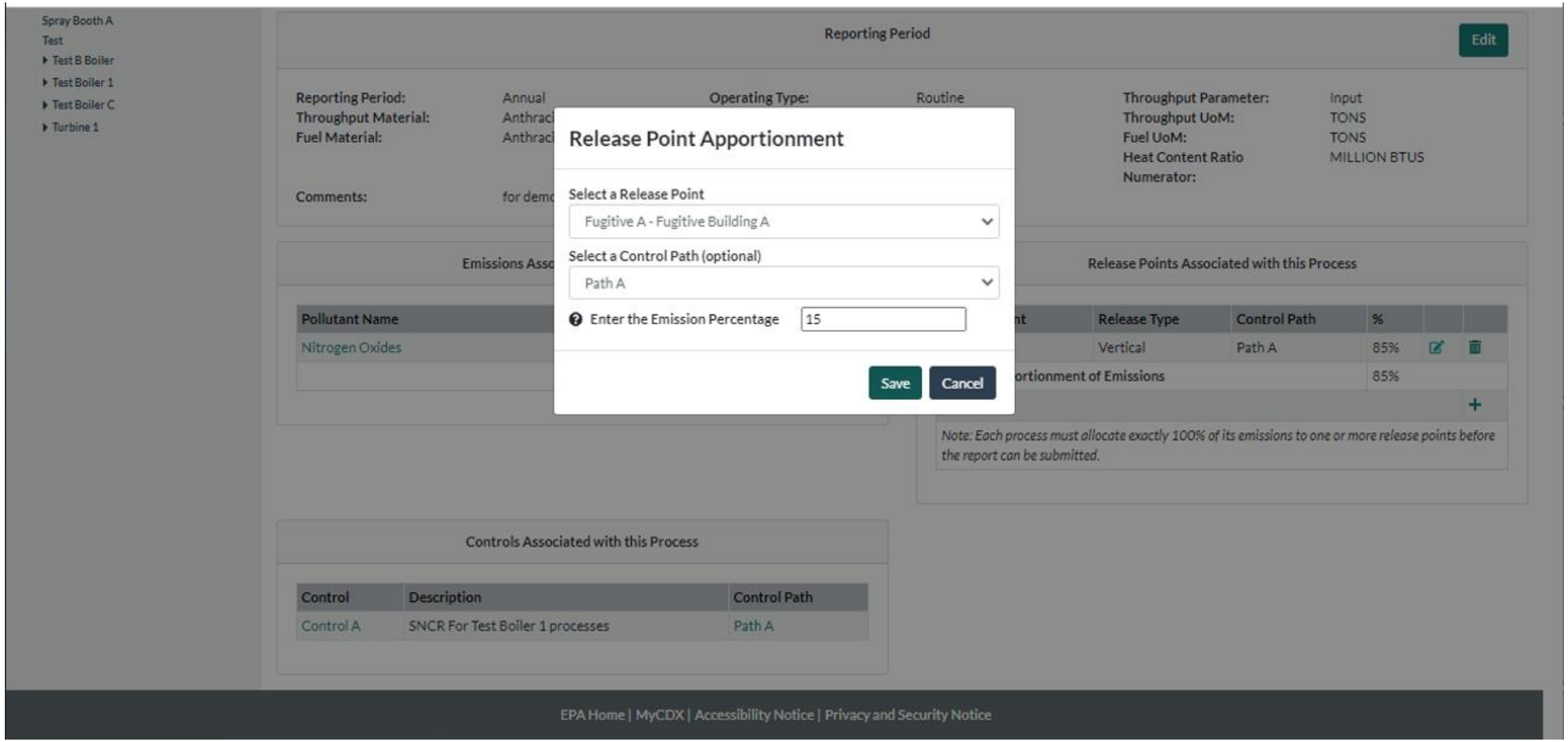
Select the Process for the Control



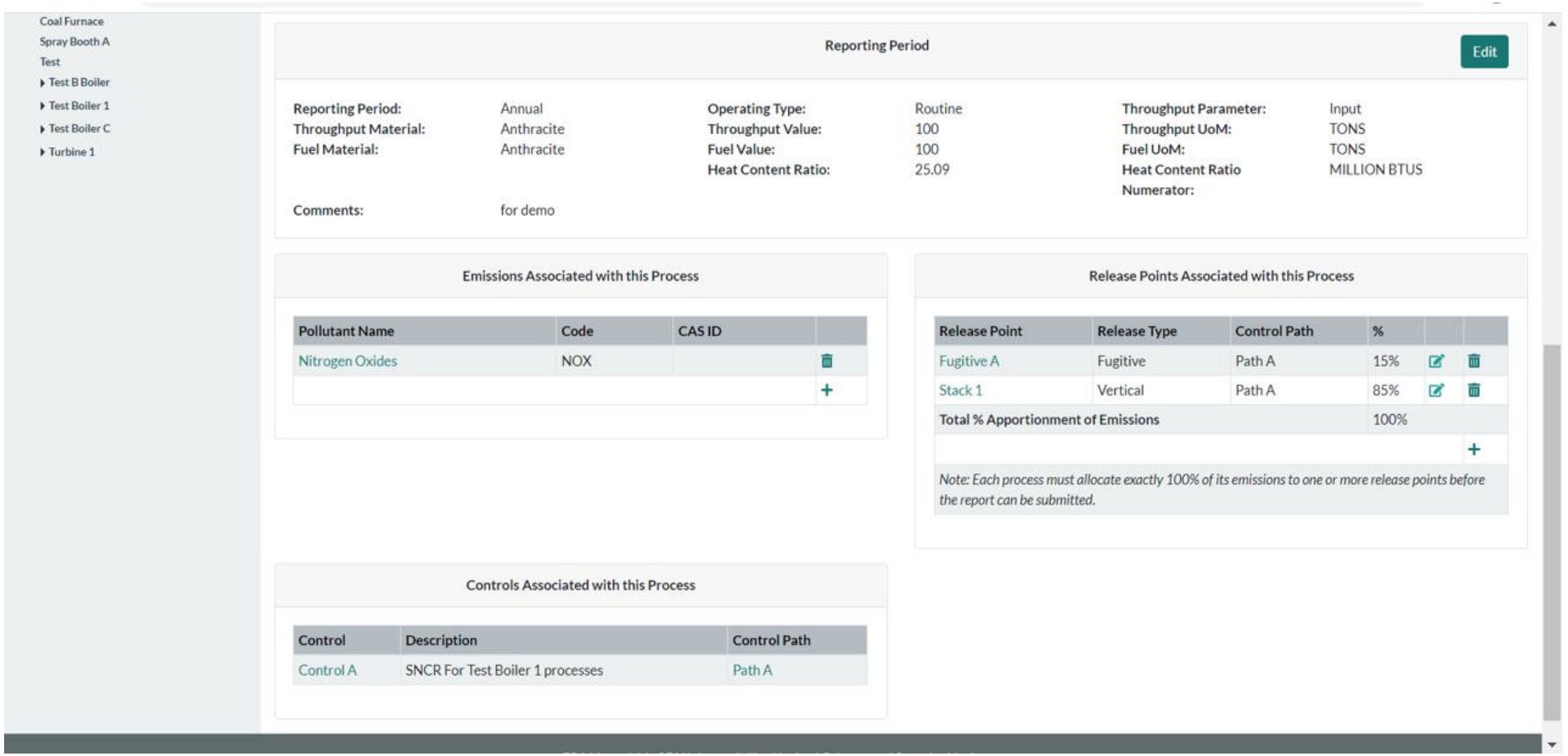
Select Release Point



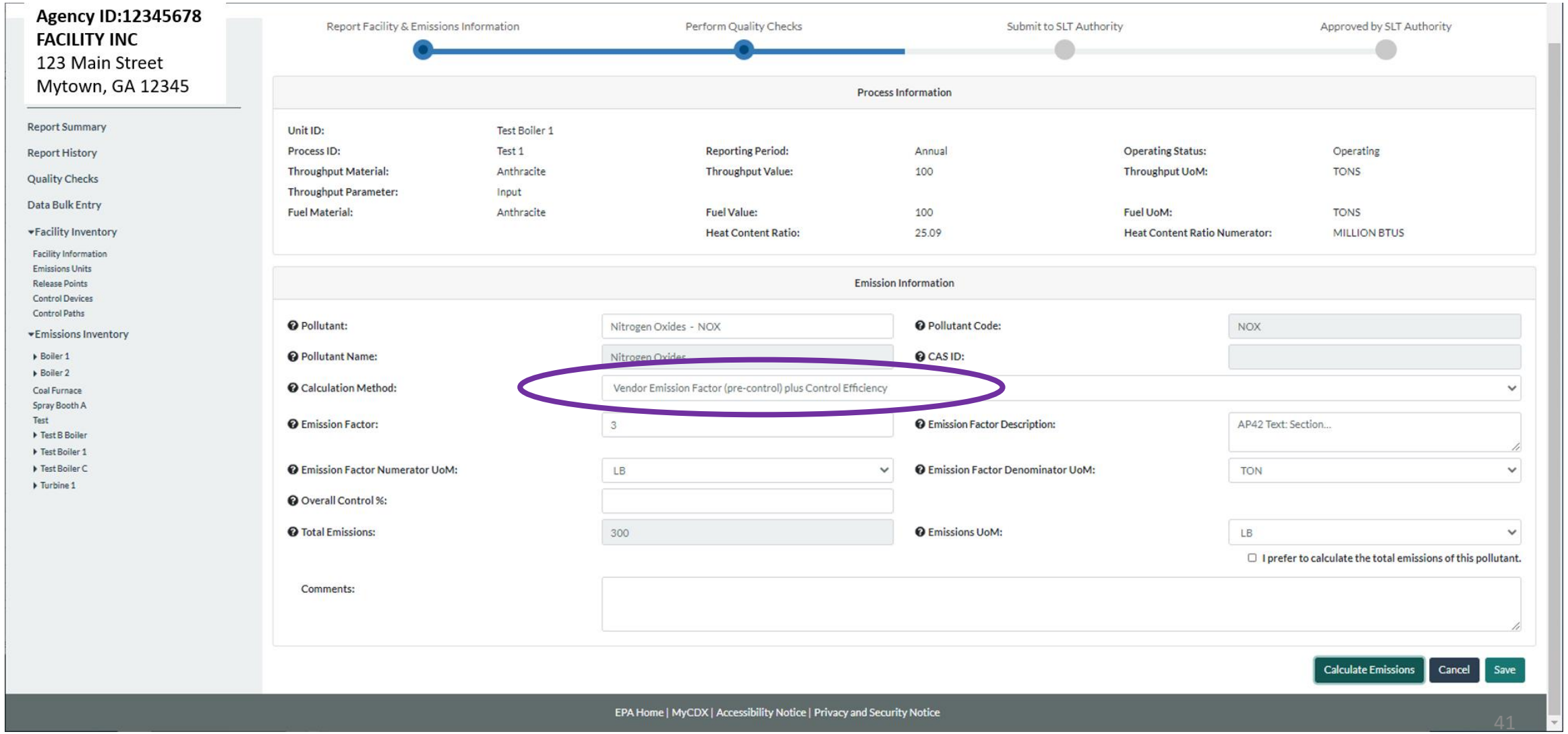
Associate Process and Release Point



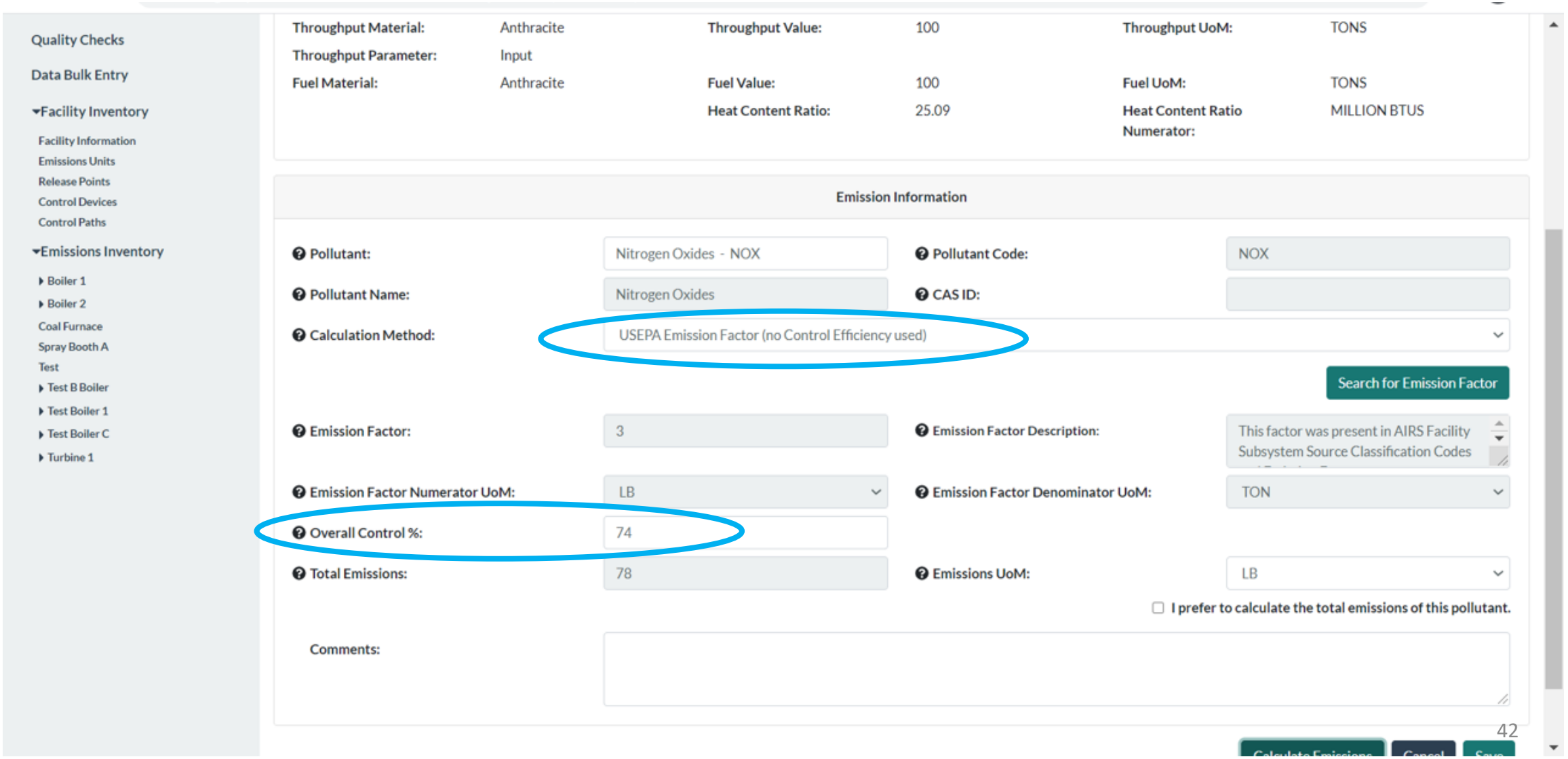
See Release Point(s) Linked to Process by Path



Can Use Post-Control Emission Factor

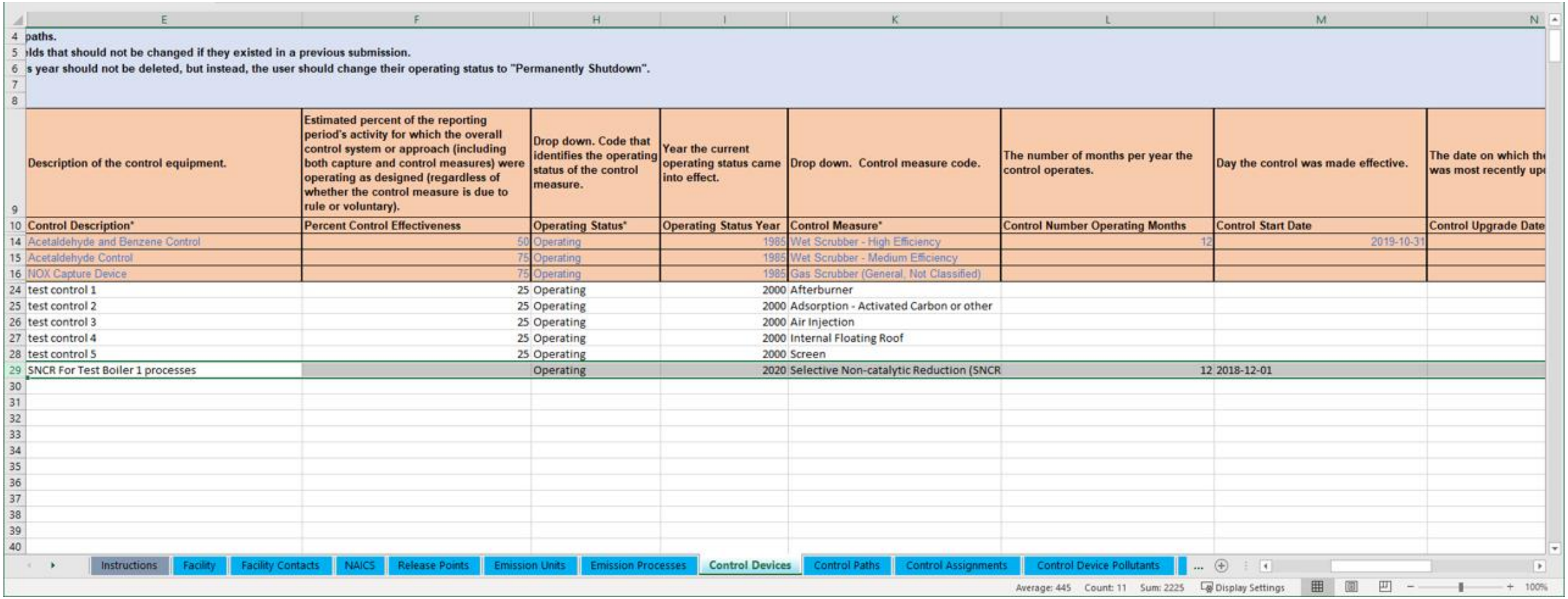


Can Use Pre-Control Emission Factor



One Control in Bulk Upload

Enter Data in Control Devices Tab



paths.
lds that should not be changed if they existed in a previous submission.
s year should not be deleted, but instead, the user should change their operating status to "Permanently Shutdown".

Description of the control equipment.	Estimated percent of the reporting period's activity for which the overall control system or approach (including both capture and control measures) were operating as designed (regardless of whether the control measure is due to rule or voluntary).	Drop down. Code that identifies the operating status of the control measure.	Year the current operating status came into effect.	Drop down. Control measure code.	The number of months per year the control operates.	Day the control was made effective.	The date on which th was most recently up
Control Description*	Percent Control Effectiveness	Operating Status*	Operating Status Year	Control Measure*	Control Number Operating Months	Control Start Date	Control Upgrade Date
Acetaldehyde and Benzene Control	50	Operating	1985	Wet Scrubber - High Efficiency	12	2019-10-31	
Acetaldehyde Control	75	Operating	1985	Wet Scrubber - Medium Efficiency			
NOX Capture Device	75	Operating	1985	Gas Scrubber (General, Not Classified)			
test control 1	25	Operating	2000	Afterburner			
test control 2	25	Operating	2000	Adsorption - Activated Carbon or other			
test control 3	25	Operating	2000	Air Injection			
test control 4	25	Operating	2000	Internal Floating Roof			
test control 5	25	Operating	2000	Screen			
SNCR For Test Boiler 1 processes		Operating	2020	Selective Non-catalytic Reduction (SNCR	12	2018-12-01	

Instructions | Facility | Facility Contacts | NAICS | Release Points | Emission Units | Emission Processes | Control Devices | Control Paths | Control Assignments | Control Device Pollutants

Average: 445 Count: 11 Sum: 2225 Display Settings 100%

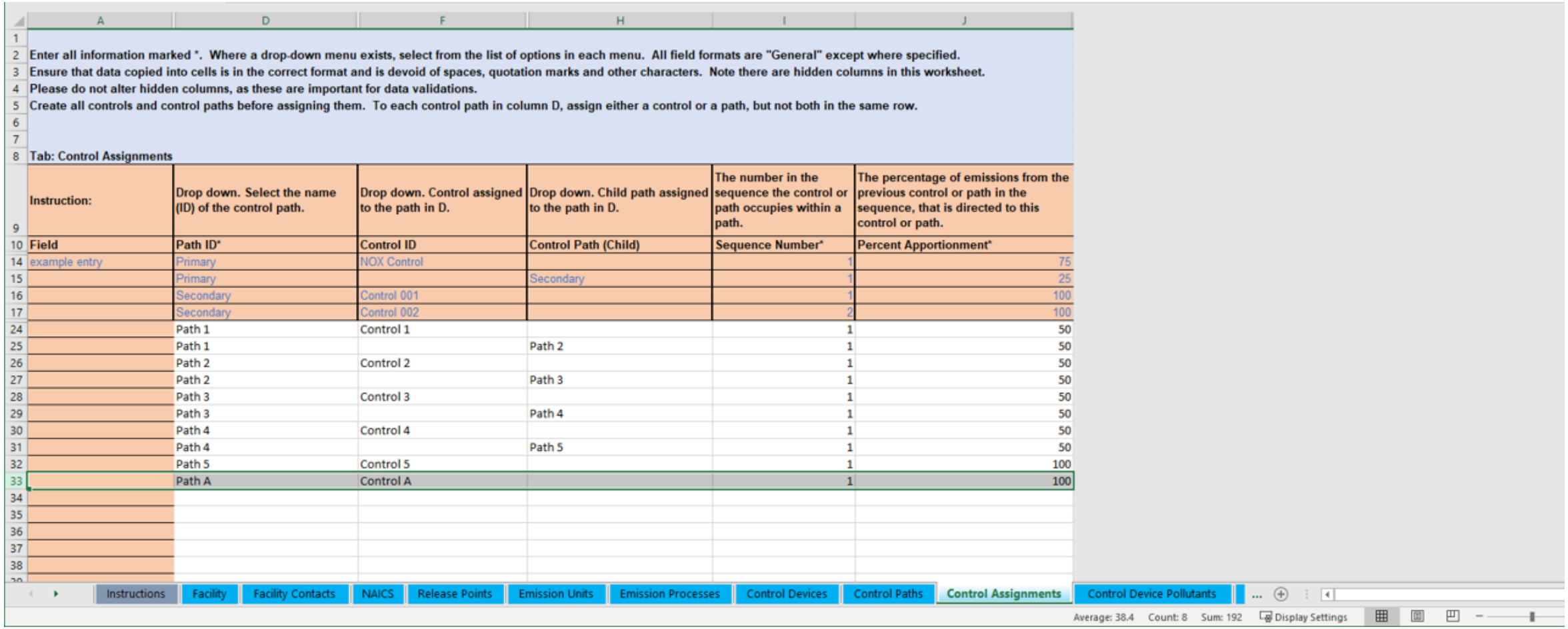
Enter Data in the Control Paths Tab

	A	C	D	F
4	Ensure that data copied into cells is in the correct format and is devoid of spaces, quotation marks and other characters.			
5	Note there are hidden columns in this worksheet. Please do not alter hidden columns, as these are important for data validations.			
6	You should enter all control path information before assigning them to other paths or associating them with processes and release points.			
7				
8	Tab: Control Paths			
9	Instruction:	Identifier of the control path, given by the facility.	Description of the control path.	Estimated percent of the reporting period's activity for which the overall control system or approach (including both capture and control measures) were operating as designed (regardless of whether the control measure is due to rule or voluntary).
10	Field	Path ID*	Path Description*	Percent Control Effectiveness
14	example entry	Primary	Primary Control Flow	50
15		Secondary	Secondary Control Flow	75
24		Path 1	test path 1	2
25		Path 2	test path 2	3
26		Path 3	test path 3	4
27		Path 4	test path 4	5
28		Path 5	test path 5	6
29		Path A	Test Boiler 1 Test 1	97
30				
31				
32				
33				

Instructions | Facility | Facility Contacts | NAICS | Release Points | Emission Units | Emission Processes | Control Devices | Control Paths | Control Assignments | Control Device Pollutants

Average: 50 Count: 5 Sum: 150 Display Settings

Enter Data in the Control Assignments Tab



Enter all information marked *. Where a drop-down menu exists, select from the list of options in each menu. All field formats are "General" except where specified.
Ensure that data copied into cells is in the correct format and is devoid of spaces, quotation marks and other characters. Note there are hidden columns in this worksheet.
Please do not alter hidden columns, as these are important for data validations.
Create all controls and control paths before assigning them. To each control path in column D, assign either a control or a path, but not both in the same row.

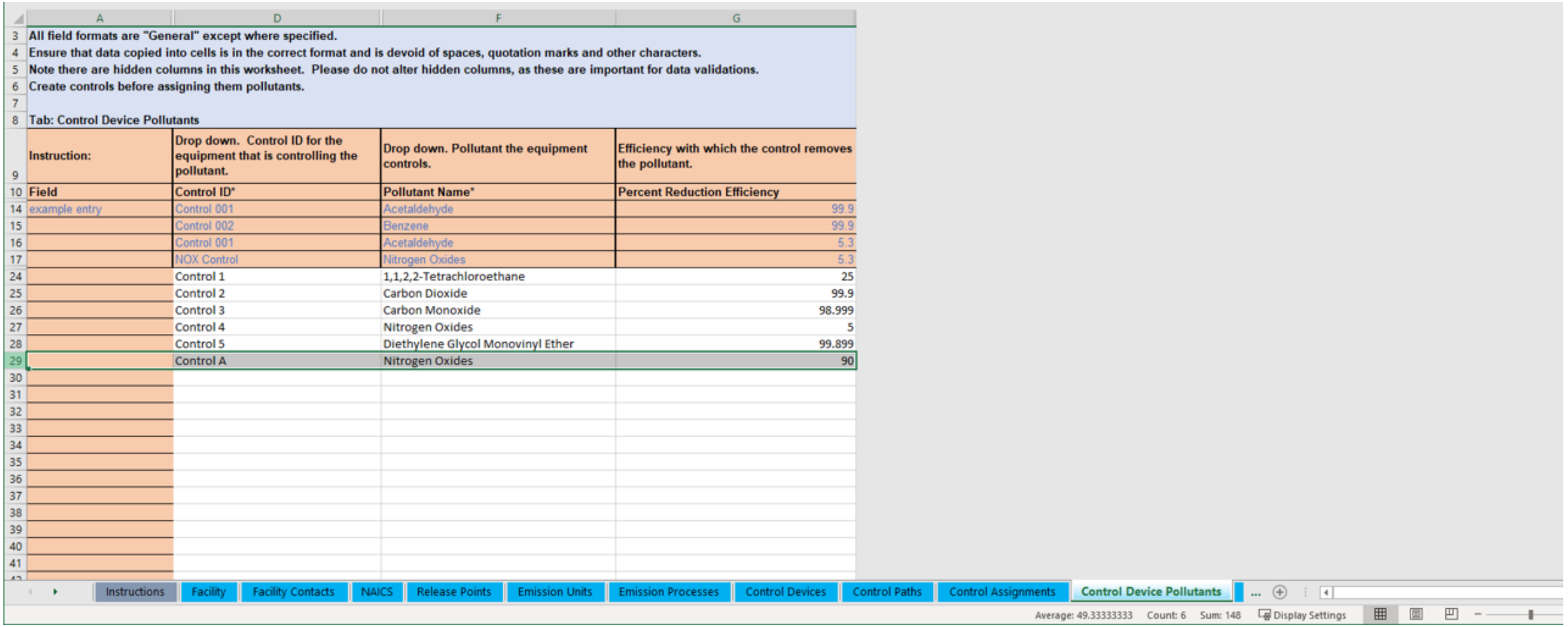
Tab: Control Assignments

Instruction:	Drop down. Select the name (ID) of the control path.	Drop down. Control assigned to the path in D.	Drop down. Child path assigned to the path in D.	The number in the sequence the control or path occupies within a path.	The percentage of emissions from the previous control or path in the sequence, that is directed to this control or path.
Field	Path ID*	Control ID	Control Path (Child)	Sequence Number*	Percent Apportionment*
example entry	Primary	NOX Control		1	75
	Primary		Secondary	1	25
	Secondary	Control 001		1	100
	Secondary	Control 002		2	100
	Path 1	Control 1		1	50
	Path 1		Path 2	1	50
	Path 2	Control 2		1	50
	Path 2		Path 3	1	50
	Path 3	Control 3		1	50
	Path 3		Path 4	1	50
	Path 4	Control 4		1	50
	Path 4		Path 5	1	50
	Path 5	Control 5		1	100
	Path A	Control A		1	100

Instructions | Facility | Facility Contacts | NAICS | Release Points | Emission Units | Emission Processes | Control Devices | Control Paths | Control Assignments | Control Device Pollutants

Average: 38.4 Count: 8 Sum: 192 Display Settings

Enter Data in the Control Device Pollutant Tab



All field formats are "General" except where specified.
Ensure that data copied into cells is in the correct format and is devoid of spaces, quotation marks and other characters.
Note there are hidden columns in this worksheet. Please do not alter hidden columns, as these are important for data validations.
Create controls before assigning them pollutants.

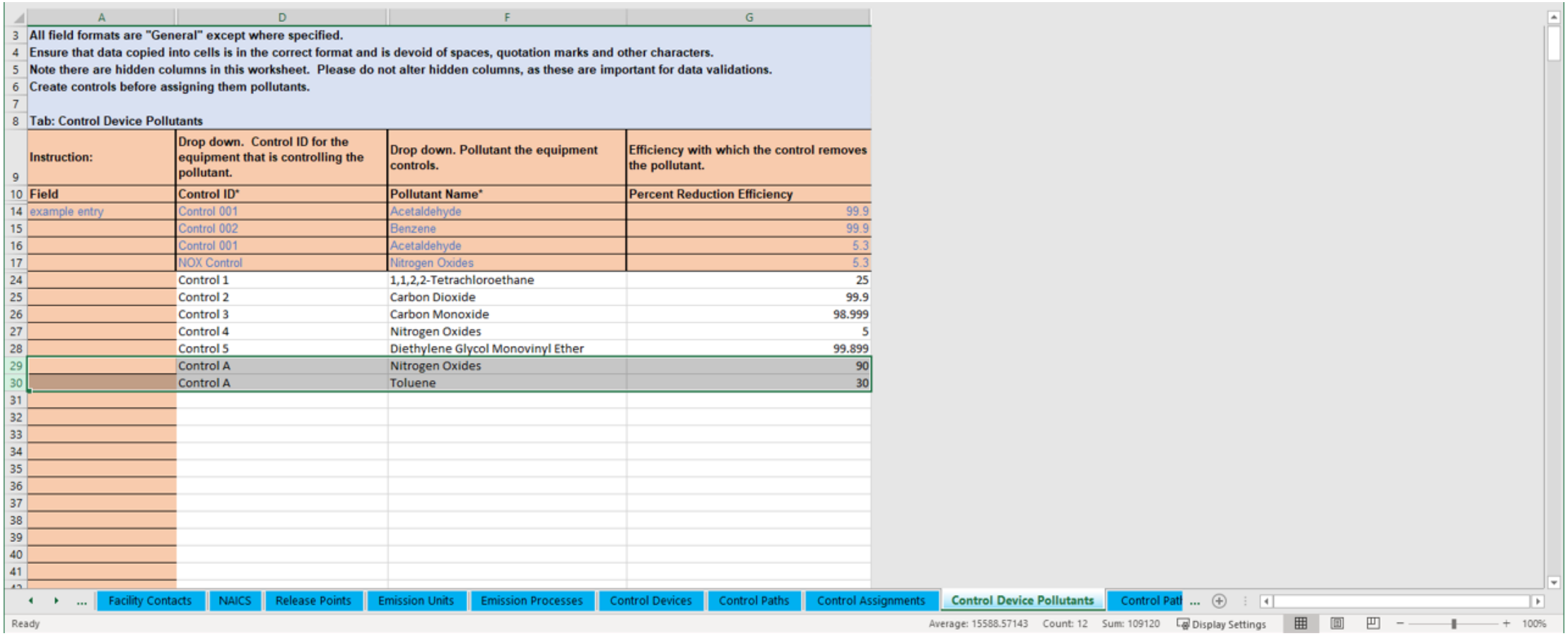
Tab: Control Device Pollutants

Instruction:	Drop down. Control ID for the equipment that is controlling the pollutant.	Drop down. Pollutant the equipment controls.	Efficiency with which the control removes the pollutant.
Field	Control ID*	Pollutant Name*	Percent Reduction Efficiency
example entry	Control 001	Acetaldehyde	99.9
	Control 002	Benzene	99.9
	Control 001	Acetaldehyde	5.3
	NOX Control	Nitrogen Oxides	5.3
	Control 1	1,1,2,2-Tetrachloroethane	25
	Control 2	Carbon Dioxide	99.9
	Control 3	Carbon Monoxide	98.999
	Control 4	Nitrogen Oxides	5
	Control 5	Diethylene Glycol Monovinyl Ether	99.899
	Control A	Nitrogen Oxides	90

Instructions | Facility | Facility Contacts | NAICS | Release Points | Emission Units | Emission Processes | Control Devices | Control Paths | Control Assignments | Control Device Pollutants

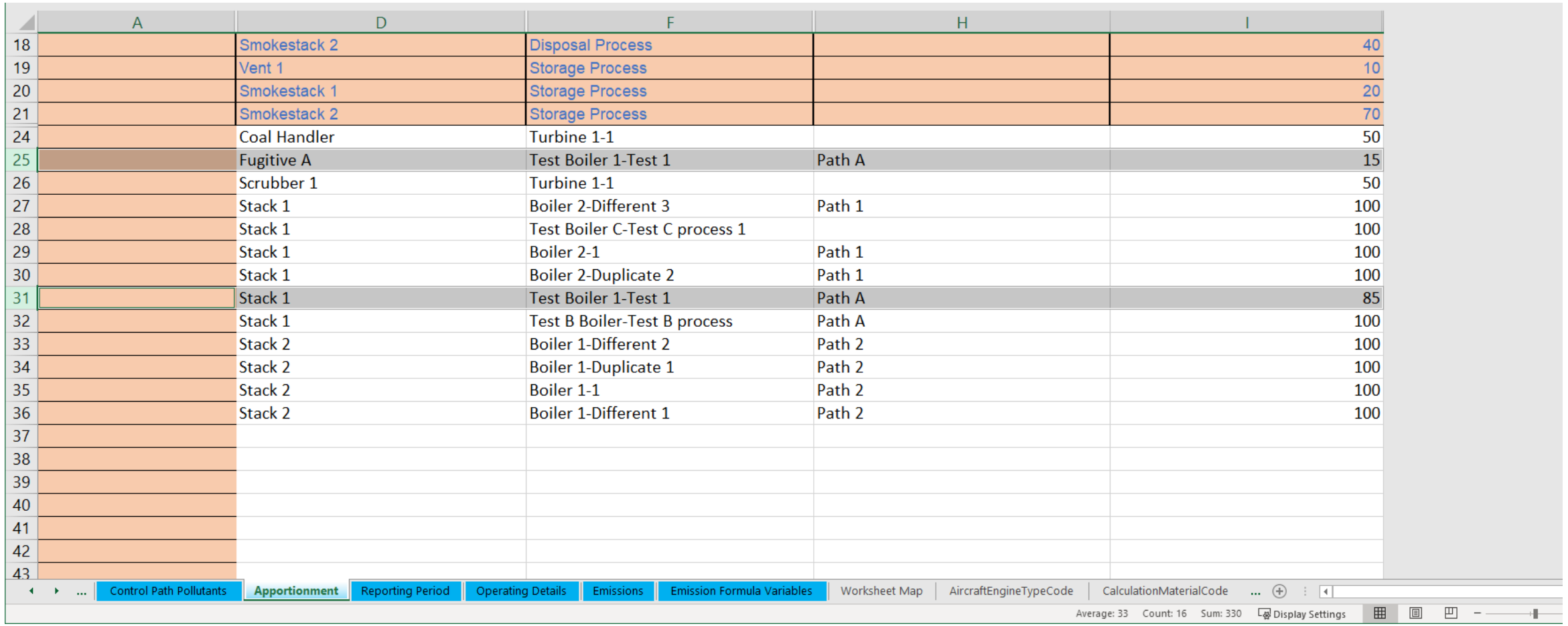
Average: 49.33333333 Count: 6 Sum: 148 Display Settings

Enter All Pollutants if More than One



	A	D	F	G
3	All field formats are "General" except where specified.			
4	Ensure that data copied into cells is in the correct format and is devoid of spaces, quotation marks and other characters.			
5	Note there are hidden columns in this worksheet. Please do not alter hidden columns, as these are important for data validations.			
6	Create controls before assigning them pollutants.			
7				
8	Tab: Control Device Pollutants			
9	Instruction:	Drop down. Control ID for the equipment that is controlling the pollutant.	Drop down. Pollutant the equipment controls.	Efficiency with which the control removes the pollutant.
10	Field	Control ID*	Pollutant Name*	Percent Reduction Efficiency
14	example entry	Control 001	Acetaldehyde	99.9
15		Control 002	Benzene	99.9
16		Control 001	Acetaldehyde	5.3
17		NOX Control	Nitrogen Oxides	5.3
24		Control 1	1,1,2,2-Tetrachloroethane	25
25		Control 2	Carbon Dioxide	99.9
26		Control 3	Carbon Monoxide	98.999
27		Control 4	Nitrogen Oxides	5
28		Control 5	Diethylene Glycol Monovinyl Ether	99.899
29		Control A	Nitrogen Oxides	90
30		Control A	Toluene	30
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				

Enter Data in the Apportionment Tab

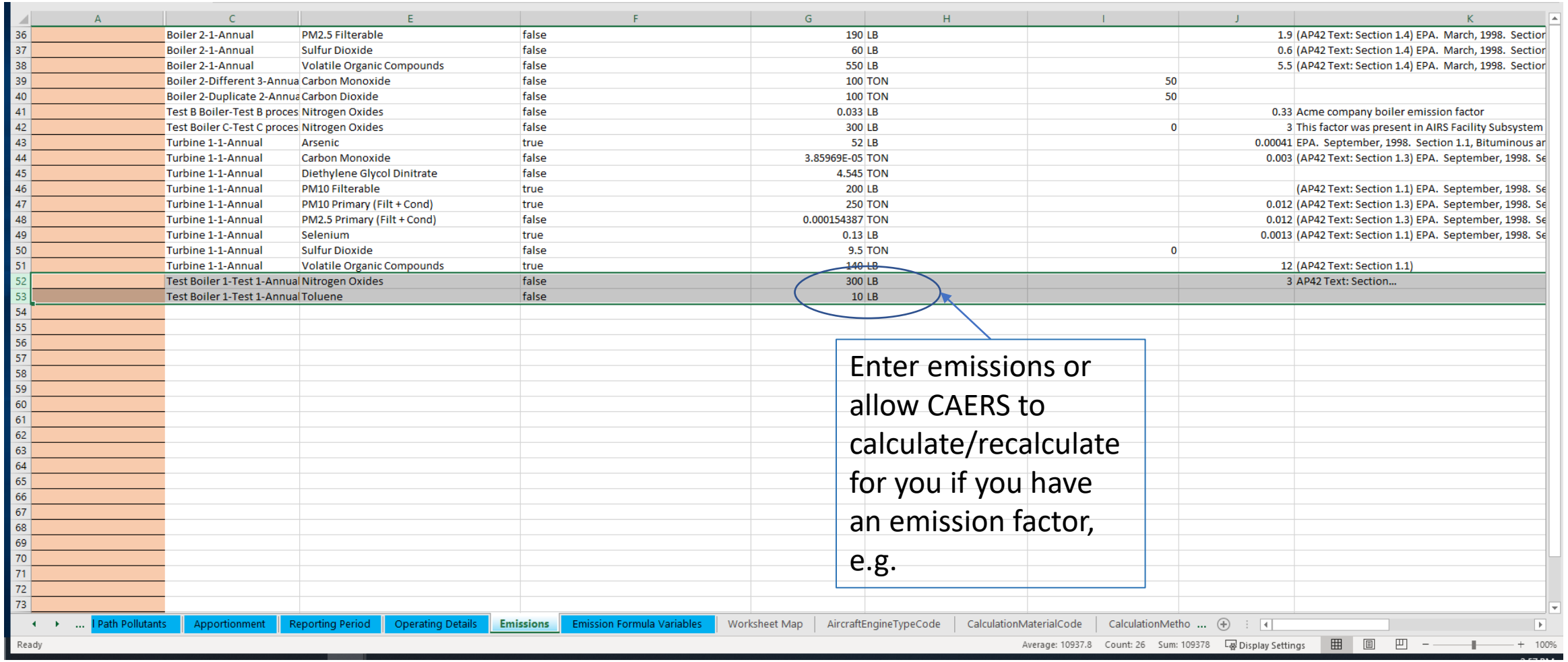


	A	D	F	H	I
18		Smokestack 2	Disposal Process		40
19		Vent 1	Storage Process		10
20		Smokestack 1	Storage Process		20
21		Smokestack 2	Storage Process		70
24		Coal Handler	Turbine 1-1		50
25		Fugitive A	Test Boiler 1-Test 1	Path A	15
26		Scrubber 1	Turbine 1-1		50
27		Stack 1	Boiler 2-Different 3	Path 1	100
28		Stack 1	Test Boiler C-Test C process 1		100
29		Stack 1	Boiler 2-1	Path 1	100
30		Stack 1	Boiler 2-Duplicate 2	Path 1	100
31		Stack 1	Test Boiler 1-Test 1	Path A	85
32		Stack 1	Test B Boiler-Test B process	Path A	100
33		Stack 2	Boiler 1-Different 2	Path 2	100
34		Stack 2	Boiler 1-Duplicate 1	Path 2	100
35		Stack 2	Boiler 1-1	Path 2	100
36		Stack 2	Boiler 1-Different 1	Path 2	100
37					
38					
39					
40					
41					
42					
43					

Control Path Pollutants | Apportionment | Reporting Period | Operating Details | Emissions | Emission Formula Variables | Worksheet Map | AircraftEngineTypeCode | CalculationMaterialCode

Average: 33 Count: 16 Sum: 330 Display Settings

Ensure Process Lists Pollutants



	A	C	E	F	G	H	I	J	K
36		Boiler 2-1-Annual	PM2.5 Filterable	false	190	LB		1.9	(AP42 Text: Section 1.4) EPA. March, 1998. Sectior
37		Boiler 2-1-Annual	Sulfur Dioxide	false	60	LB		0.6	(AP42 Text: Section 1.4) EPA. March, 1998. Sectior
38		Boiler 2-1-Annual	Volatile Organic Compounds	false	550	LB		5.5	(AP42 Text: Section 1.4) EPA. March, 1998. Sectior
39		Boiler 2-Different 3-Annua	Carbon Monoxide	false	100	TON	50		
40		Boiler 2-Duplicate 2-Annua	Carbon Dioxide	false	100	TON	50		
41		Test B Boiler-Test B proces	Nitrogen Oxides	false	0.033	LB		0.33	Acme company boiler emission factor
42		Test Boiler C-Test C proces	Nitrogen Oxides	false	300	LB	0	3	This factor was present in AIRS Facility Subsystem
43		Turbine 1-1-Annual	Arsenic	true	52	LB		0.00041	EPA. September, 1998. Section 1.1, Bituminous ar
44		Turbine 1-1-Annual	Carbon Monoxide	false	3.85969E-05	TON		0.003	(AP42 Text: Section 1.3) EPA. September, 1998. Se
45		Turbine 1-1-Annual	Diethylene Glycol Dinitrate	false	4.545	TON			
46		Turbine 1-1-Annual	PM10 Filterable	true	200	LB			(AP42 Text: Section 1.1) EPA. September, 1998. Se
47		Turbine 1-1-Annual	PM10 Primary (Filt + Cond)	true	250	TON		0.012	(AP42 Text: Section 1.3) EPA. September, 1998. Se
48		Turbine 1-1-Annual	PM2.5 Primary (Filt + Cond)	false	0.000154387	TON		0.012	(AP42 Text: Section 1.3) EPA. September, 1998. Se
49		Turbine 1-1-Annual	Selenium	true	0.13	LB		0.0013	(AP42 Text: Section 1.1) EPA. September, 1998. Se
50		Turbine 1-1-Annual	Sulfur Dioxide	false	9.5	TON	0		
51		Turbine 1-1-Annual	Volatile Organic Compounds	true	140	LB		12	(AP42 Text: Section 1.1)
52		Test Boiler 1-Test 1-Annual	Nitrogen Oxides	false	300	LB		3	AP42 Text: Section...
53		Test Boiler 1-Test 1-Annual	Toluene	false	10	LB			
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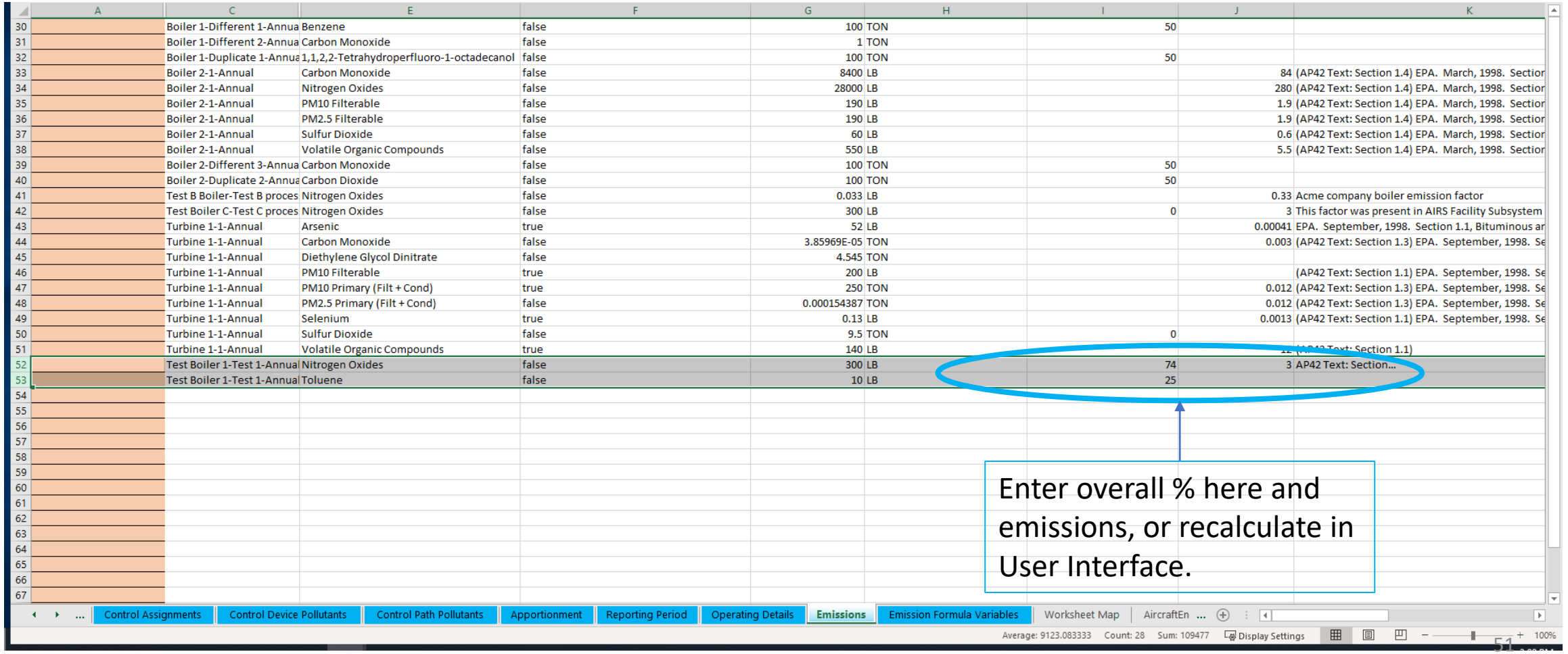
72									
73									

Enter emissions or allow CAERS to calculate/recalculate for you if you have an emission factor, e.g.

List Overall % if Applicable



	A	C	E	F	G	H	I	J	K
30		Boiler 1-Different 1-Annua	Benzene	false	100	TON	50		
31		Boiler 1-Different 2-Annua	Carbon Monoxide	false	1	TON			
32		Boiler 1-Duplicate 1-Annua	1,1,2,2-Tetrahydroperfluoro-1-octadecanol	false	100	TON	50		
33		Boiler 2-1-Annual	Carbon Monoxide	false	8400	LB		84	(AP42 Text: Section 1.4) EPA. March, 1998. Sectior
34		Boiler 2-1-Annual	Nitrogen Oxides	false	28000	LB		280	(AP42 Text: Section 1.4) EPA. March, 1998. Sectior
35		Boiler 2-1-Annual	PM10 Filterable	false	190	LB		1.9	(AP42 Text: Section 1.4) EPA. March, 1998. Sectior
36		Boiler 2-1-Annual	PM2.5 Filterable	false	190	LB		1.9	(AP42 Text: Section 1.4) EPA. March, 1998. Sectior
37		Boiler 2-1-Annual	Sulfur Dioxide	false	60	LB		0.6	(AP42 Text: Section 1.4) EPA. March, 1998. Sectior
38		Boiler 2-1-Annual	Volatile Organic Compounds	false	550	LB		5.5	(AP42 Text: Section 1.4) EPA. March, 1998. Sectior
39		Boiler 2-Different 3-Annua	Carbon Monoxide	false	100	TON	50		
40		Boiler 2-Duplicate 2-Annua	Carbon Dioxide	false	100	TON	50		
41		Test B Boiler-Test B proces	Nitrogen Oxides	false	0.033	LB		0.33	Acme company boiler emission factor
42		Test Boiler C-Test C proces	Nitrogen Oxides	false	300	LB	0	3	This factor was present in AIRS Facility Subsystem
43		Turbine 1-1-Annual	Arsenic	true	52	LB		0.00041	EPA. September, 1998. Section 1.1, Bituminous ar
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45		Turbine 1-1-Annual	Diethylene Glycol Dinitrate	false	4.545	TON			
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47		Turbine 1-1-Annual	PM10 Primary (Filt + Cond)	true	250	TON		0.012	(AP42 Text: Section 1.3) EPA. September, 1998. Se
48		Turbine 1-1-Annual	PM2.5 Primary (Filt + Cond)	false	0.000154387	TON		0.012	(AP42 Text: Section 1.3) EPA. September, 1998. Se
49		Turbine 1-1-Annual	Selenium	true	0.13	LB		0.0013	(AP42 Text: Section 1.1) EPA. September, 1998. Se
50		Turbine 1-1-Annual	Sulfur Dioxide	false	9.5	TON	0		
51		Turbine 1-1-Annual	Volatile Organic Compounds	true	140	LB		12	(AP42 Text: Section 1.1)
52		Test Boiler 1-Test 1-Annual	Nitrogen Oxides	false	300	LB	74	3	AP42 Text: Section...
53		Test Boiler 1-Test 1-Annual	Toluene	false	10	LB	25		
54									
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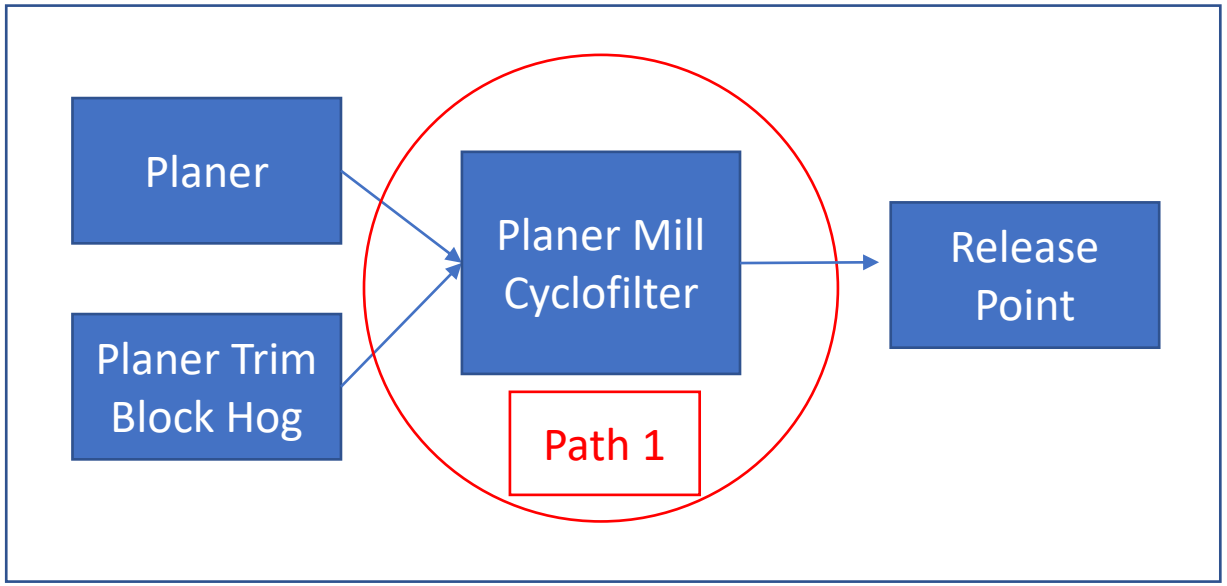
67									

Enter overall % here and emissions, or recalculate in User Interface.

Considerations to Keep in Mind

- Please don't re-label or delete controls that existed in a previous year report, instead, mark them as "Permanently Shut Down" or your inventory in EPA will be out of sync. Seeking input on when/how/why facilities relabel components, send to caer@epa.gov.
- You could enter your control data in UI to help guide you, then download in BU template to continue the rest of your report and viceversa.
- If you enter a control device you must also enter its: pollutant reduction efficiency, effectiveness, release point apportionment, and path assignment

Real Example 1



Path Data			
Path ID	**Sequence Number**	**Control or Child Path Assignment**	**Assigned Control or Child Path Apportionment**
Path 1	1	Planer Mill cyclofilter	100%

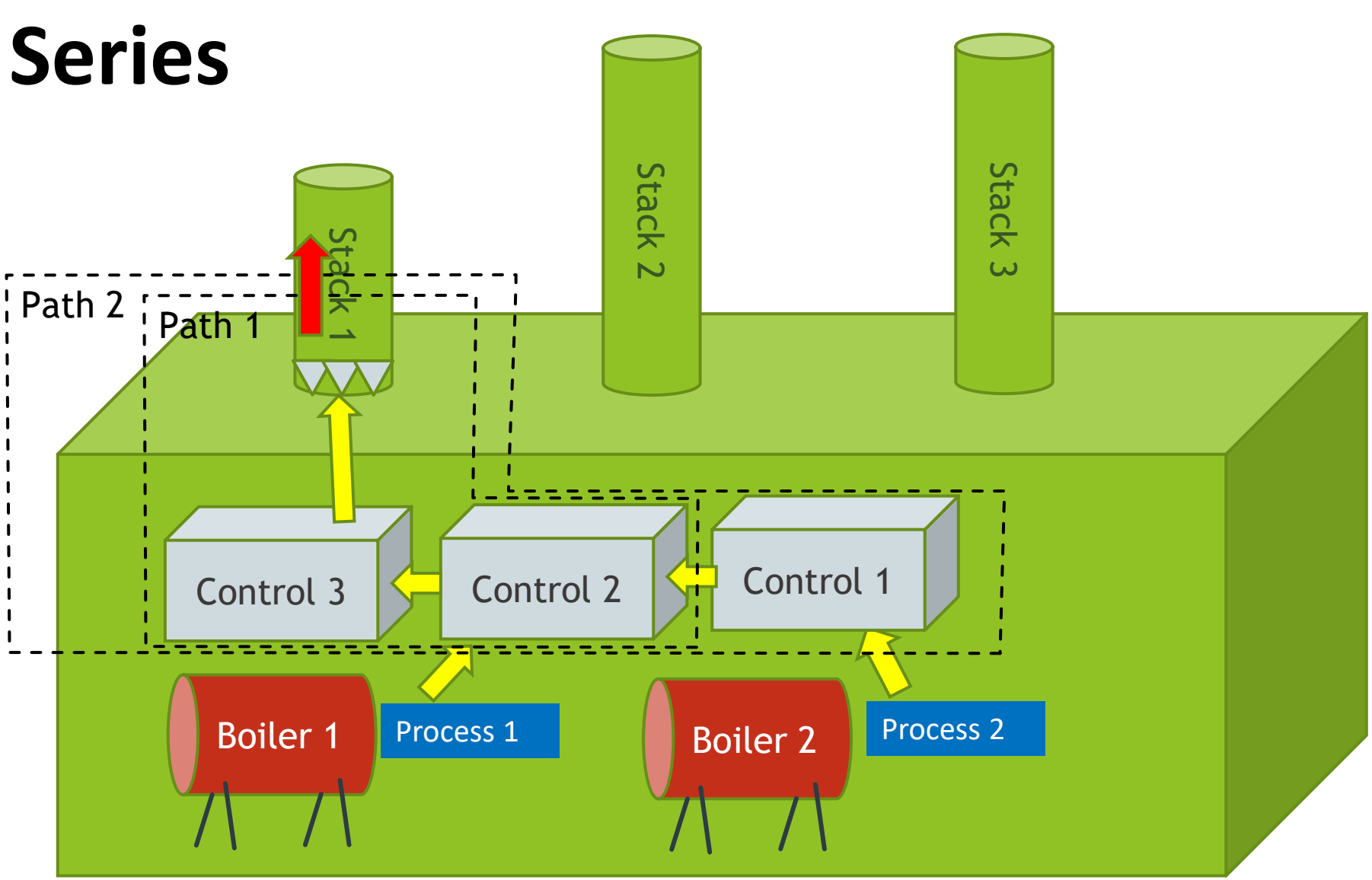
Control Data				
Unit ID	**Process ID**	**Path ID**	**Release Point ID**	**Release Point Apportionment**
Planer	Process 1	Path 1	Stack 1	100%
Planer Trim Block Hog	Process 2	Path 1	Stack 1	100%

In this example we have two processes sending emissions into the Planer Mill Cyclofilter. Path 1 can be the main path for the single control and can be used for both processes.

One Control Device Q&A

More than One Control

In Series



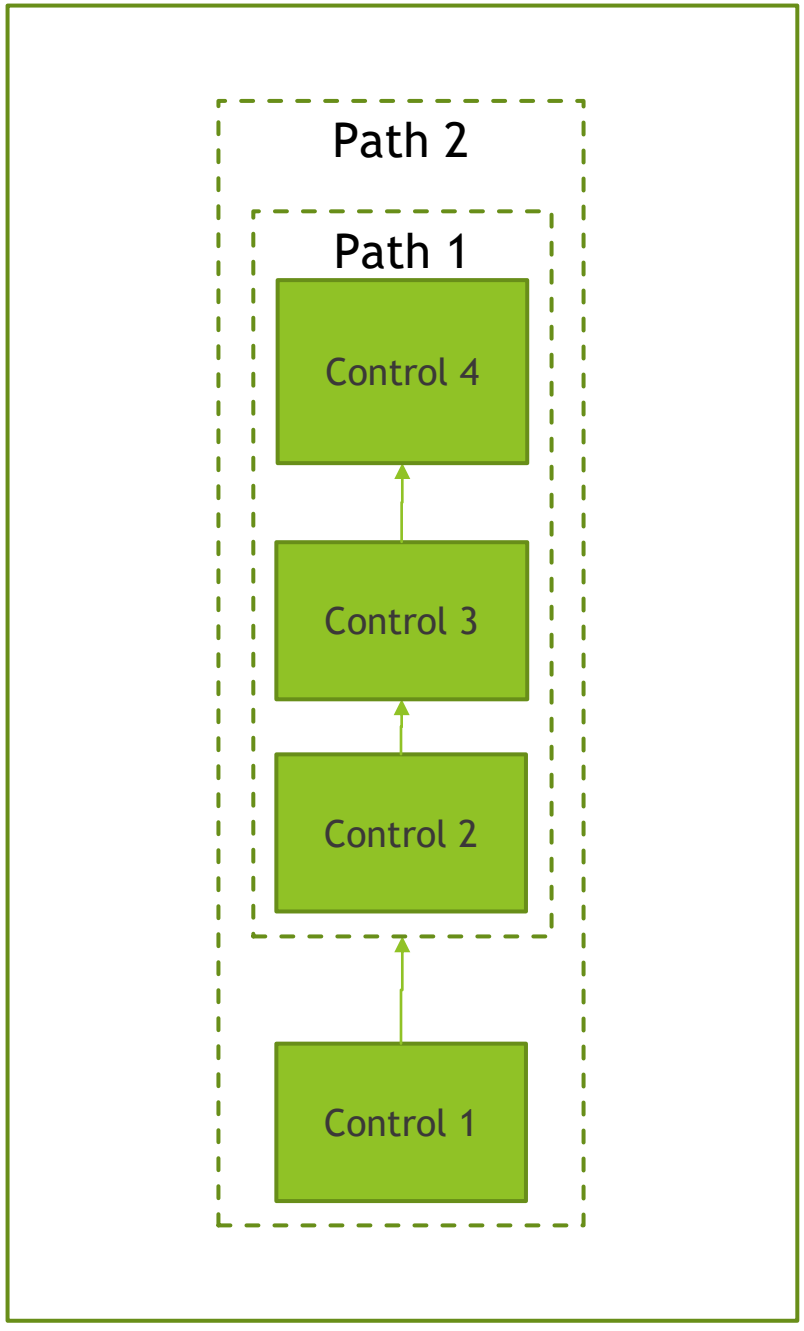
Controls 1, 2, 3, and 4 are set up in sequence. Boiler and Process 2 send emissions to control 1. Boiler and process 1 send emissions to control 2. Path 1 is the main path between Boiler and Process 1 to Stack 1. Path 2 is the main path between boiler and process 2 and stack 1. Path 1 is a “child” path of Path 2. Path 2 is a “main” path.

Numerical Example for Controls in Series

Old Approach Method

Unit ID	Process ID	Control Applicability Level	Control Description	% Capture	% Effectiveness	Control Comment	Pollutant	% Reduction Efficiency
Boiler 2	Process 2	PROCESS	Control approach name	100%	91%	Control approach	VOC	80%
							CO	95%
							PM10-PRI	90%
							PM-CON	100%
							NOX	90%
							SO2	90%

For Boiler 1 you might have a separate approach similar to this one but excluding Control 1.



New Path Method

Control Data

Control ID	R.P. Apportiont.	% Effectiveness	Pollutant	% Efficiency	Overall % Reduction
Control 1	100%	95%	VOC	80%	76%
			CO	95%	90%

Control ID	R.P. Apportiont.	% Effectiveness	Pollutant	% Efficiency	Overall % Reduction
Control 2	100%	90%	PM10-PRI	90%	81%
			PM-CON	100%	90%

Control ID	R.P. Apportiont.	% Effectiveness	Pollutant	% Efficiency	Overall % Reduction
Control 3	100%	90%	NOX	90%	81%

Control ID	R.P. Apportiont.	% Effectiveness	Pollutant	% Efficiency	Overall % Reduction
Scrubber 1	100%	90%	SO2	90%	81%

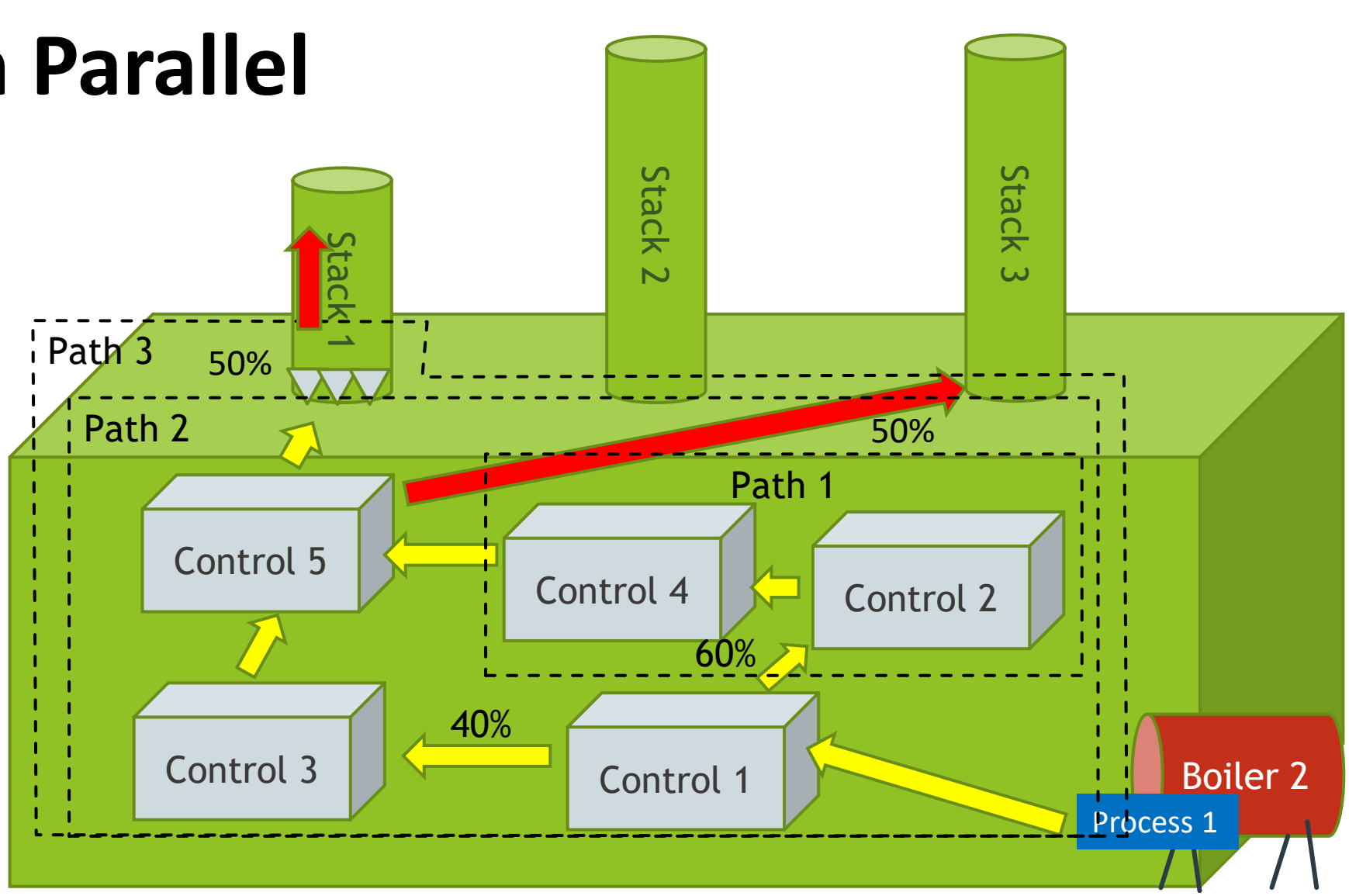
Path Data

Path ID	Sequence Number	Assignment (Control or Path)	Apportionment (Control or Path)
Path 1	1	Control 2	100%
Path 1	2	Control 3	100%
Path 1	3	Scrubber 1	100%
Path 2	1	Control 1	100%
Path 2	2	Path 1	100%

Release Point Data

Unit ID	Process ID	Path ID	Release Point ID	Release Point Apportionment
Boiler 1	Process 1	Path 1	Stack 1	100%
Boiler 2	Process 2	Path 2	Stack 1	100%

In Parallel

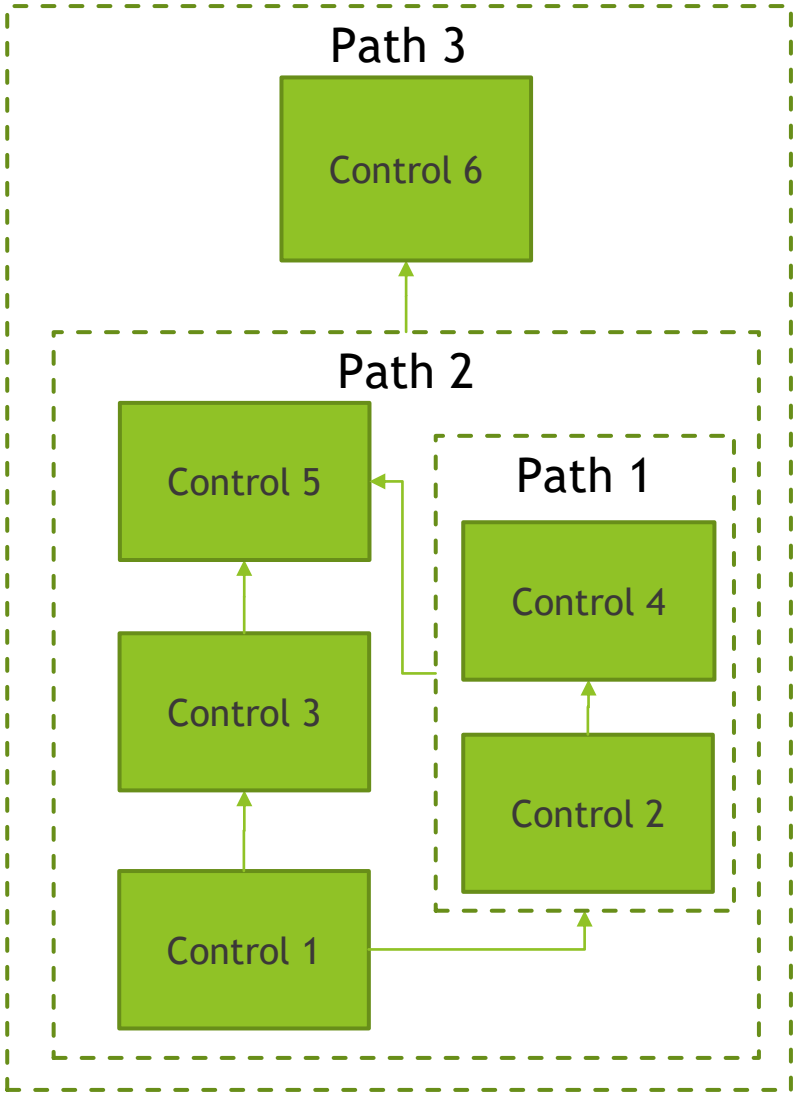


Path 1 is a child path of Path 2. Path 2 is a "main path" between the process and Stack 3. Path 2 is a child path of Path 3. Path 3 is a "main path" between the process and Stack 1.

Numerical Example for Controls in Parallel

Old Approach Method

Unit ID	Process ID	Control Applicability Level	Control Description	% Capture	% Effectiveness	Control Comment	Pollutant	% Reduction Efficiency
Boiler 2	Process 2	PROCESS	Control approach name	94%	93%	Control approach	VOC	80%
							PM10-PRI	90%
							PM-CON	100%
							CO	95%
							NOX	99%
							Pb	95%
							SO2	97%



New Path Method

Control Data

Control ID	R.P. Apportiont.	% Effectiveness	Pollutant	% Efficiency	Overall % Reduction
Control 1	90%	95%	VOC	80%	68%

Control ID	R.P. Apportiont.	% Effectiveness	Pollutant	% Efficiency	Overall % Reduction
Control 2	100%	90%	PM10-PRI	90%	81%
			PM-CON	100%	90%

Control ID	R.P. Apportiont.	% Effectiveness	Pollutant	% Efficiency	Overall % Reduction
Control 3	100%	90%	CO	95%	86%

Control ID	R.P. Apportiont.	% Effectiveness	Pollutant	% Efficiency	Overall % Reduction
Control 4	80%	95%	NOX	99%	75%

Control ID	R.P. Apportiont.	% Effectiveness	Pollutant	% Efficiency	Overall % Reduction
Control 5	95%	90%	Pb	95%	81%

Control ID	R.P. Apportiont.	% Effectiveness	Pollutant	% Efficiency	Overall % Reduction
Scrubber 1	100%	98%	SO2	97%	95%

Path Data

Path ID	Sequence Number	Assignment (Control or Path)	Apportionment (Control or Path)
Path 1	1	Control 2	100%
Path 1	2	Control 4	100%
Path 2	1	Control 1	[illegible]
Path 2	2	Control 3	40%
Path 2	2	Path 1	60%
Path 2	3	Control 5	100%
Path 3	1	Path 2	100%
Path 3	2	Scrubber 1	100%

Average path release point apportionment 94%, could be weighted average or other as estimated by the facility reporter

Release Point Data

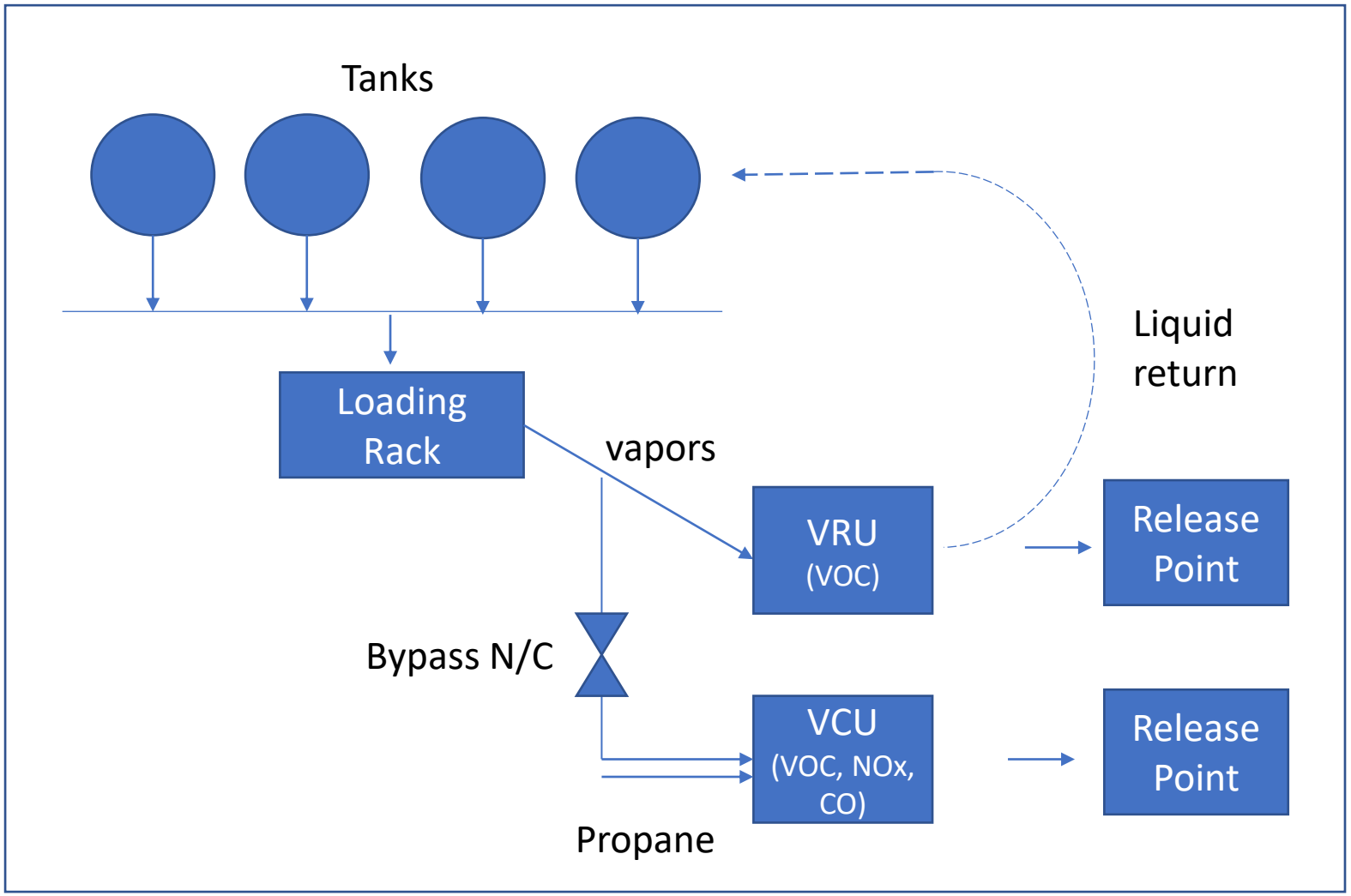
unit ID	Process ID	Path ID	Release Point ID	Release Point Apportionment
Boiler 2	Process 1	Path 2	Stack 3	47%
Boiler 2	Process 1	Path 3	Stack 1	47%
Boiler 2	Process 1	Path 2	Fugitive	3%
Boiler 2	Process 1	Path 2	Fugitive	3%

Additional Considerations about Overall % Controlled

When calculating emissions, if you have more than one control for the *same* pollutant, e.g. controls 1 and 3 both remove SO2, then your Overall % controlled may be:

- **In series:** overall % control 1 * overall % control 2 * …
- **In parallel:** (overall controlled emissions 1 + overall controlled emissions 2+…)/uncontrolled emissions
- **Really complex controls configuration:** estimate:
  - e.g. (controlled emissions in series + controlled emissions in parallel)/uncontrolled emissions,
  - e.g. weighted average of the % pollutant control efficiency for all controls

Real Example 2

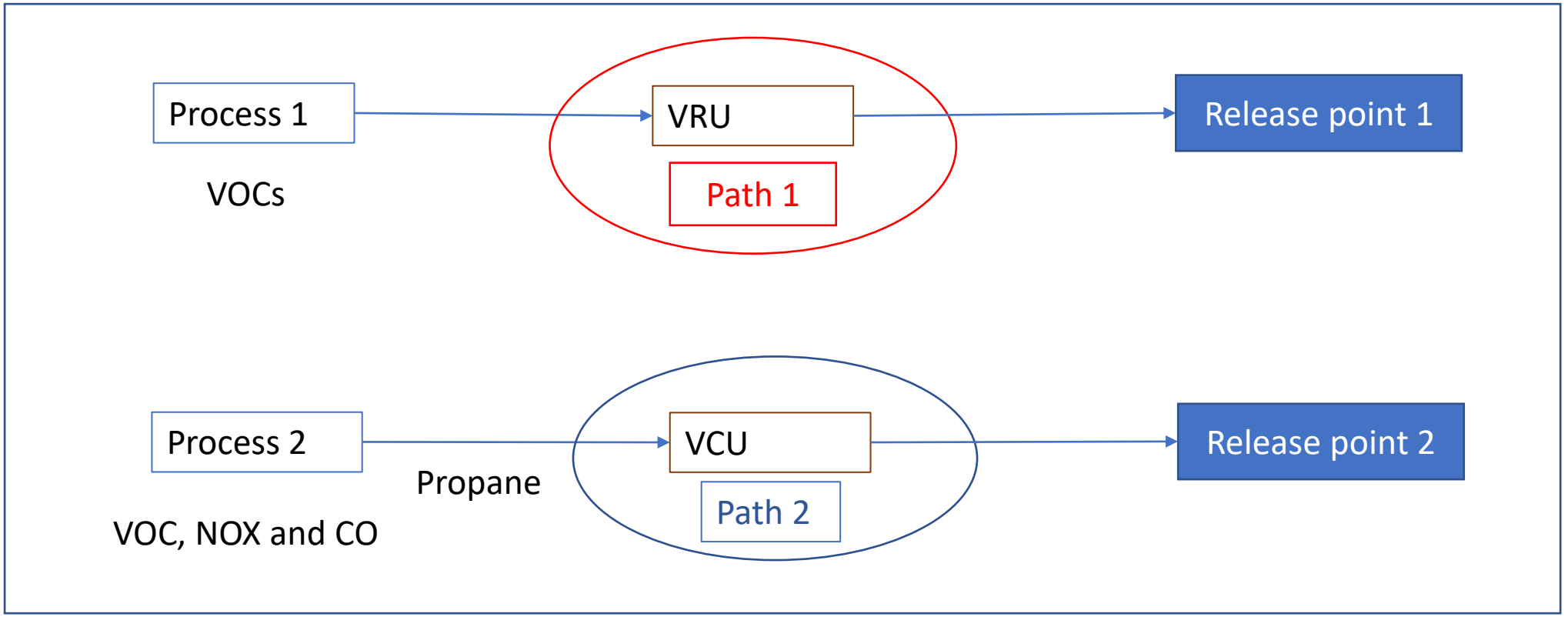


1. The emissions only go to the VCU when the VRU is not working, per permit. The VCU is a backup to the VRU and only was used about 1% of 2019, about 100 hours.

2. Only one runs at a time, taking 100% of the inlet/emissions.

3. Two different release points. A vent off the VRU, the VCU is a stack/flare.

4. Gasoline vapor is only emissions off the loading rack. So VCU emissions are VOCs. Because we use propane in the VRC it's has VOC and NOx/CO.



Process 1 (VOC)

Path 1:
VRU sequence 1

If individual control capture isn't 100% then rel apportionment should be adjusted to reflect fugitives.

Process 2 (VOC, NOX and CO)

Path 2
VCU Sequence 1

Recall VCU is a "backup" for the first process.

Path Data			
Path ID	**Sequence Number**	**Control or Child Path Assignment**	**Assigned Control or Child Path Apportionment**
Path 1	1	VRU	100%
Path 2	1	VCU	100%

Release Point Data				
Unit ID	**Process ID**	**Path ID**	**Release Point ID**	**Release Point Apportionment**
Unit 1	Process 1	Path 1	Release Point 1	100%
	Process 2	Path 2	Release Point 2	100%

There are two different processes with different SCCs:
Evaporation recovery unit of gasoline vapors, for VOC and HAP-VOC pollutants.
Propane combustion process including all combustion pollutants, plus whatever VOC wasn't combusted.
How long each control runs (100 hours), etc. would be entered with the process information.

“Take Home” Messages about Path Approach

- An inventory of controls is defined at the facility level
- The relationship between the controls is defined by one or more “control paths”
  - You must define a path for each unique set of controls encountered between the emissions generation point and the release point
  - A path is composed of controls AND / OR paths
  - You define the order of the controls through these associations
  - You may define sets of controls that operate at the same time (parallel controls) by defining the percentage of the stream that flows in one direction or another.
- Associate a release point apportionment record to a given path

Additional Considerations for More than One Control

- How you set up the paths and controls in them for complex control set ups is up to you so long as the basic rules of child/parent/main paths are followed and all required data is entered.
- Path level pollutant efficiency may be an estimate, for paths containing several controls for a single pollutant. E.g. two controls that remove NOx.
  - **In series:** multiplication of control efficiencies
  - **In parallel:** controlled emissions from efficiency/total uncontrolled, average, weighted average
  - **More complex controls:** average, weighted average

How to Get Help

Regardless of what help you need always send:

1. Facility name and ID
2. Screenshot(s) of error you are getting
3. BU template you are using that is giving you errors
4. Diagram/even if by hand and scanned in of the controls set up you have (especially for complex controls)

Steps:

1. Help Desk first (Click Help in UI top right of your screen)
2. Your SLT (they will elevate to EPA as needed)

UPCOMING HELP SESSIONS

- **GA EPD HAPs Reporting in CAERS for 2020 NEI**
  - Tuesday, April 20 2:30 – 3:30 PM
  - Register: https://geco.gaepd.org/EventRegistration/Default.aspx
- **Live Virtual Help Sessions (April – June)**
  - Email sign-up will be offered
  - Attendance Requirements:
    - Send questions to emissions.inventory@dnr.ga.gov with a screen shot of your problem
    - We will try to address by email first
    - If not resolved by email, we will provide a live help session time slot
  - Help Session Times
    - Every other Tuesday & Thursday from April 27 – May 27
    - Every Tuesday & Thursday in June
    - Tuesdays: 10-11 AM; Thursdays: 2-3 PM

Help Sessions for Other SLTs

To be scheduled. Reach out to your SLT if you need help via office hours, if help desk have not been able to help you resolve your issue.

Q & A