

# **Guidelines for Calculating and Reporting Emissions from Welding Operations**

December 2024

This guideline was adopted from San Diego APCD's document dated July 11, 2022, for reporting PM and hazardous metals emissions from welding operations. EPA's AP-42 (1/95) Final Section Tables 12.19-1 for the welding rod fume generation rate and 12.19-2 for the trace metal component are also attached below.

Welding is the process of joining two metal parts by melting the parts at the joint and filling the space with molten metal. Most commonly frequently used welding methods are as follows:

Gas Metal Arc Welding (GMAW) a. k. a. Metal Inert Gas (MIG) Welding

Gas Tungsten Arc Welding (GTAW) a. k. a. Tungsten Inert Gas (TIG) Welding

Shielded Metal Arc Welding (SMAW) a. k. a. Manual Metal Arc (MMA) Welding

Flux Core Arc Welding (FCAW)

San Diego APCD default welding emission factors be found can at https://www.sdapcd.org/content/sdapcd/permits/toxics-emissions/calculationprocedures.html#v1-2f8774f98a-item-0d2efbdb5d. Procedures for these emission factors can be https://www.sdapcd.org/content/dam/sdapcd/documents/permits/emissionsfound at calculation/welding/APCD-Welding-Operations.pdf

If default San Diego APCD emission factors are not available, the following San Diego APCD emission calculation methodology should be applied based on the TACs listed in the SDS. The methodology should also be applied if the TACs listed in the SDS deviate from those presented in the San Diego APCD emission factors.

## **Emission Calculations**

The calculation method for estimating emissions for welding operations are primarily dependent on the emission factor, fume generation rate, and concentration of listed substance in each welding rod.

**Case 1:** If an emission factor is listed in EPA's AP-42 (1/95) Final Section Table 12.19-1 for the welding rod fume generation rate with correct welding process, but not Table 12.19-2 for the trace metal component, the following procedure will be used:

$$Ea = Ua \ x \ EF \ x \ FCF \ x \ Ci \ x \ (1 - e)$$

Where: Ea = Annual emissions of each listed toxic air contaminant per rod, (lb/year)

Ua = Annual usage of each welding rod, (lb/year)

EF = Particulate (PM10) emission factor from AP-42 Table 12.19-1, (lb fume/lb rod consumed)

*FCF* = Fume correction factor per NASSCO, (lb metal/lb fume)

= 0.5464 for GMAW

= 0.2865 for SMAW

*Ci* = Concentration of listed substance in each welding rod per SDS, (lb substance/lb metal)

e =Control equipment PM10 overall collection and removal efficiency, (%)

If a hexavalent chromium emission factor does not exist, a Cr to Cr+6 conversion rate of 5% for GMAW, 55% for SMAW, 0.05% for SAW, and 10% for FCAW will be applied per AWMA Study (2012). It is assumed that MIG and TIG welding are similar to GMAW per ARB.

**Case 2:** If AP-42 (1/95) Final Section Tables 12.19-1 and 12.19-2 does not assess the type of welding process, but it is identified by a facility (i.e., GMAW, SMAW, etc.), the following procedure will be used:

$$Ea = Ua \times EF \times FCF \times Ci \times (1 - e)$$

Where: Ea = Annual emissions of each listed toxic air contaminant per rod, (lb/year)

Ua = Annual usage of each welding rod, (lb/year)

*EF* = Fume emission factor per ARB, (lb fume/lb rod consumed)

= 0.01 for GMAW / MIG / TIG

= 0.02 for SMAW / FCAW

*FCF* = Fume correction factor per NASSCO - Richard Bell, (lb metal/lb fume)

= 0.5464 for GMAW / MIG / TIG

= 0.2865 for SMAW / FCAW

*Ci* = Concentration of listed substance in each welding rod per SDS, (lb substance/lb metal)

e =Control equipment PM10 overall collection and removal efficiency, (%)

If a hexavalent chromium emission factor does not exist, a Cr to Cr+6 conversion rate of 5% for GMAW, 55% for SMAW, 0.05% for SAW, and 10% for FCAW will be applied per AWMA Study (2012). It is assumed that MIG and TIG welding are similar to GMAW per ARB.

**Case 3:** If no emission information is listed in AP-42 (1-95) Final Section 12.19 and the type of welding process is not identified by the facility (i.e., GMAW, SMAW, etc.), the following procedure will be used:

$$Ea = Ua x EF x Ci x (1 - e)$$
$$Eh = Uh x EF x Ci x (1 - e)$$

Where: Ea = Annual emissions of each listed toxic air contaminant per rod, (lb/year)

*Eh* = Maximum hourly emissions of each listed toxic air contaminant per rod, (lb/hour)

Ua = Annual usage of each welding rod, (lb/year)

- *Uh* = Maximum hourly usage of each welding rod, (lb/hour)
- *EF* = Fume emission factor, (lb fume/lb rod consumed)

= 0.05 for unidentified welding processes (default assumption)

- *Ci* = Concentration of listed substance in each welding rod per SDS, (lb substance/ lb metal)
- e = Control equipment PM10 overall collection and removal efficiency, (%)

If a hexavalent chromium emission factor does not exist, a Cr to Cr+6 conversion rate of 10% should be assumed for unidentified welding processes.

### **Example**

8,000 lb of 308-type electrode used for GMAW for the year.

 $Ea = Ua \ x \ EF \ x \ (1 - e)$  $Ua = 8000 \ lb \ rod/year$ e = 0%

**Emission Factors** 

 $\label{eq:pm} \begin{array}{l} PM = PM10 = 5.40E\text{-}03 \ lb \ total \ fume/lb \ rod \ from \ AP-42 \ Table \ 12.19-1 \\ Cr = 7.72E\text{-}03 \ lb/lb \ rod \ from \ SDAPCD \\ Cr6 = 2.84E\text{-}05 \ lb/lb \ rod \ from \ SDAPCD \\ Co = 1.00E\text{-}06 \ lb/lb \ rod \ from \ AP-42 \ Table \ 12.19-2 \\ Mn = 3.46E\text{-}04 \ lb/lb \ rod \ from \ AP-42 \ Table \ 12.19-2 \\ Ni = 1.84E\text{-}04 \ lb/lb \ rod \ from \ AP-42 \ Table \ 12.19-2 \end{array}$ 

PM Emissions = 8,000 lb rod/yr \* 5.40E-03 lb total fume/lb rod \* (1-0) = 43.2 lb Cr Emissions = 8,000 lb rod/yr \* 7.72E-03 lb/lb rod \* (1-0) = 61.8 lb Cr6 Emissions = 8,000 lb rod/yr \* 2.84E-05 lb/lb rod \* (1-0) = 0.227 lb Co Emissions = 8,000 lb rod/yr \* 1.00E-06 lb/lb rod \* (1-0) = 0.008 lb Mn Emissions = 8,000 lb rod/yr \* 3.46 E-04 lb/lb rod \* (1-0) = 2.77 lb Ni Emissions = 8,000 lb rod/yr \* 1.84E-04 lb/lb rod \* (1-0) = 1.47 lb

## **Entering Data into the AER Webtool**

Click on Emission Sources (ES) on the menu on the left-hand side. Then click on the orange Add New Emission Source button

Facility ID: 999901	Build Reporting Structure							
Facility Comments	Emission Sources (ES) Classification							
1. Facility Information								
2. Status Update 3. Combustion Eucls	Summary: This section contains facility permit profile. Please make sure that every device has a specified Emission Source							
A. Emission Sources (ES)     Report Process/Emissions     Additional Toxic	Instruction: Add Devices (emission sources) by clicking "Add New Emission Source". Edit devices by clicking "Profile" under th Emission Source (ES) Column. Add emission data by clicking "Open" under the Emissions column. Upload storage data by clicking on link "Click here" below.							
Substances Production and Usage								
7. Perform Data Validation	Storage Tank Emissions Batch File Import - <u>Click here</u> for more instructions.							
9. Print Facility Report 10. Report Submission	Add New Emission Source							

Enter data in the text boxes with the red asterisk, then click on the orange Categorize Emission Sources button.

Facility ID: 999006	Edit Emission Source									
Facility Comments	East Emission Source									
Abbreviated Reporting 1. Facility Information 2. Status Update 3. Combustion Fuels	Instruction: Add new e placards. 9 with a Red informatio	missions sources using information found on permits, manufacturers specifications, or identifying select the Operating ES Status that best reflect the device's operation for this reporting period. All areas Asterisk (*) must be addressed. Note: Some devices have been pre-populated, verify that the n is correct								
4. Emission Sources (ES) 5. Report Process/Emissions	Abbreviated Repor	ting								
6. Additional Toxic Substances Production and Usage 7. Perform Data Validation	Starting in Reporting Year 2022 some facilities can qualify for Abbreviated Reporting Your eligibility to file Abbreviated Report depends in part on the types of Emission Sources used at your Facility. Click <u>here</u> to find out more details about Abbreviated Reporting and its possible benefits.									
8. Review Summaries	Permitted									
9. Print Facility Report	A/N									
10. Report Submission	PERP Equipment(CARB's Portable Equipment Registration Program)									
	Permit No									
	Permit Device ID									
	Permit Equipment Description									
	AER Device ID	will be assigned upon saving								
	ES Name	Welding *								
	Operating ES Status	Normal Operation								
	Comment									
	Emission Source Category	Categorize Emission Source								
	Design Capacity	0								
	Save or Save and ret	urn to List of Emission Sources or								
	Save and proceed to Proc	ess Reporting or <u>Cancel</u>								
	Optional: Save and Mark a	Click here to <u>delete</u> this emission source and associated data.								

Click on the Other Process check box and click save.

Categorize Emission Source												
Permitted	A/N	Permit No	Permit Device ID	Permit Equipment Description	AER Device ID	ES Name						
No					ES7	Plasma Arc Cutting						
<ol> <li>External Combustion Equipment (e.g., boiler, dryer, oven, furnace, heater, afterburner, flare, kiln or incinerator) <u>click here</u> to select one the following Equipment:</li> <li>Internal Combustion Equipment (e.g., internal combustion engine (excluding vehicles), turbine or micro turbine) <u>click here</u> to select one of the following Equipment:</li> <li>Spray Coating/Spray Booth (e.g., coatings, solvents, adhesives, etc.) <u>click here</u> to select one of the following Equipment:</li> <li>Other Use of Organics (e.g., coatings, solvents, inks, adhesives, etc.) except in Spray Coating/Spray Booth, <u>click here</u> to select one of the following Equipment:</li> </ol>												
5, Liquid S	Storage 1	Fank (e.g. Under	ground, Aboveground, Sn	nall Tanks, Dispensing Systems) <u>click here</u> t	o select one of the fol	lowing Equipment:						
6. Fugitive	e Compo	nents (Emission	Leaks from Process Comp	ponents per Rule 462, 1173 and 1176), click	chere to select all app	licable Equipment:						
7. Other P	7. Other Processes (does not fit in any of the groups mentioned above), click <u>click here</u> to mark "Other Process Equipment":											
						Save Cancel						

## Click on the orange Save and Proceed to Process Reporting button

Facility ID: 999006	Edit Emission Source										
Facility Comments	Edit Emission Source										
Abbreviated Reporting 1. Facility Information 2. Status Update 3. Combustion Fuels 4. Emission Sources (ES) 5. Report Process/Emissions 6. Additional Toxic Substances Production and Usage 7. Referen Data Volidation	Instruction: Add new emissions sources using information found on permits, manufacturers specifications, or identifying placards. Select the Operating ES Status that best reflect the device's operation for this reporting period. All areas with a Red Asterisk (*) must be addressed. Note: Some devices have been pre-populated, verify that the information is correct										
	Abbreviated Report Starting in Reporting Year 2022 Your eligibility to file Abbrevi Click <u>here</u> to find out more de	<b>ting</b> 2 some facilities can qualify for Abbreviated Reporting i <b>ated Report depends in part on the types of Emission Sources used at your Facility.</b> tails about Abbreviated Reporting and its possible benefits.									
8. Review Summaries	Permitted										
9. Print Facility Report	A/N										
10. Report Submission	PERP Equipment(CARB's Portable Equipment Registration Program)										
	Permit No										
	Permit Device ID										
	Permit Equipment Description										
	AER Device ID	will be assigned upon saving									
	ES Name	Welding									
	Operating ES Status	Normal Operation									
	Comment										
	Emission Source Category	Categorize Emission Source									
	Design Capacity	0									
	Save or Save and retuined by Save and proceed to Procee	urn to List of Emission Sources or ess Reporting or <u>Cancel</u>									
	Optional: Save and Mark a	S Completed Click here to <u>delete</u> this emission source and associated data.									

# Click on the blue Open link next to Process ID P1

Process	Refe	rences										×
Emissions	A/N	Permit No	Permit Device ID	Permit Device Description	AER Device ID	ES Name	ES Group Name	Source Category	Emissions?	Equipment	PERP	Release Location Linked
<u>Open</u>					ES15	Welding		Other Processes	Y	Other process equipment	N	NR
Process ID Source Group Process/Material/Fuel Name Status Operation Type												
Ope	<u>n</u>	P1	Oth	er Process Emis	sions	Work in progress					ss	routine
Add P	Add Process/Material/Fuel											
												ОК
Click on	the	blue ()	nen li	nk in Sten	1							
CHER OIL	une		'Pen m	in in step	1							

# 1 1

<ul> <li>Back to Emission Sour</li> </ul>	ce Process	Referenc	e								
Other Processes											
This reporting screen reporting screens. Ple <b>Step 1 may cause dat</b> internal combustion p avoid double reportin	is for repo ase provid ta in the f process cat g. Detaile	orting ac de specif <b>ollowin</b> tegories d instruc	ctivity fic inf <b>g step</b> . Coml ctions	data fo ormatio os to res bined e are ava	or other proc on for every set. Combus missions can ailable by cli	esses us associate tion emi also be cking on	ed in your facil ed emission sou ssions need to reported here; Help icon in th	lity which urce. <b>Plea</b> be report ; however he tool ba	n were not o ase start wi ted separato r, it must be ar.	covered in pre ith Step 1, ed ely under exte e substantiated	vious i <b>ts to</b> rnal or I to
Abbreviated Rep Certain combination of of As part of Abbreviated Re If you select anything ot Click <u>here</u> to find out mo	porting porting, you her than AC re details al	code and u Must on QMD Defa bout Abbr	<b>fuel so</b> ly use A <b>ult Em</b> eviated	ource ma AQMD De ission Fa d Reporti	ay disqualify y fault Emission Ictors you will ing and its poss	<b>ou from A</b> Factors. <b>be disqu</b> ible bene	bbreviated Repo alified from Abbr fits.	orting. reviated Re	eporting.	ional: Mark as C	omploted
Step 1: Process									Ορι	ional: Mark as C	ompieted
AER Device	ID		Perr	mit Device	e ID	A/N	Process ID Rule #			Activity	SCC
Open     ES15     P1       Click here to delete     this process.											
					Annu	al Through	put				
Step 3: Criteria Emissi	ons (lbs)							U	lse <u>Default Er</u>	nission Factors if	available.
Pollutant	EF	Unit		Controlle	d EF	I	F Data Source		Overall CE	Emi	ssions
Add New											
Step 4: Toxic (TAC/OD	C) Emissio	ns (lbs)						U	lse <u>Default Er</u>	nission Factors if	available.
TAC/ODC Grou	p	CAS #	EF	Unit	Controlle	ed EF	EF Data	Source	Overa	III CE Er	nissions
Add New											

« Back to Emission Source Process Reference

AER evice ID	AER Permit vice ID Device ID		A/N	Process ID	Rule #	Activity			5	SCC	
S15				P1	405	Metals Operat	and Alloys : Fabricati ions : Arc Welding: G	ed : Machining eneral			
AER Device ID		ES15	AER Dev	ice Nam	e	Welding					
NON-PERMITTED				Permit D	evice ID						
Process ID			P1	Process	Name		Welding				
Process Co	ommer	nt									
SCC											
Activity Co	ode *	Sector	:								
		Meta	etals and Alloys								
		Indust	dustry:								
		Fabri	abricated								
		Operat	eration:								
		Mach	1achining Operations								
		Proces	ocess:								
		Arc V	Velding	: General					~		
Rule #		405	405 • Add Rule								

Choose the following options and click save.

# Click on the blue Open link in Step 2.

Other Processes         This reporting screen is for reporting activity data for other processes used in your facility which were not covered in previous reporting screens. Please provide specific information for every associated emission source. Please start with Step 1, edits to Step 1 may cause data in the following steps to reset. Combustion emissions need to be reported separately under external or internal combustion process categories. Combined emissions can also be reported here; however, it must be substantiated to avoid double reporting. Detailed instructions are available by clicking on Help icon in the tool bar.         Abbreviated Reporting       Certain combination of equipment code and fuel source may disqualify you from Abbreviated Reporting. As part of Abbreviated Reporting, you Must only use AQMD Default Emission Factors. If you select anything other than AQMD Default Emission Factors you will be disqualified from Abbreviated Reporting. Click here to find out more details about Abbreviated Reporting and its possible benefits.         Step 1: Process       Optional: Mark as Completed											
This reporting screen is for reporting activity data for other processes used in your facility which were not covered in previous reporting screens. Please provide specific information for every associated emission source. Please start with Step 1, edits to Step 1 may cause data in the following steps to reset. Combustion emissions need to be reported separately under external or internal combustion process categories. Combined emissions can also be reported here; however, it must be substantiated to avoid double reporting. Detailed instructions are available by clicking on Help icon in the tool bar.         Abbreviated Reporting       Certain combination of equipment code and fuel source may disqualify you from Abbreviated Reporting. As part of Abbreviated Reporting, you Must only use AQMD Default Emission Factors. If you select anything other than AQMD Default Emission Factors you will be disqualified from Abbreviated Reporting. Click here to find out more details about Abbreviated Reporting and its possible benefits.         Step 1: Process       Optional: Mark as Completed         AER Device ID       Permit Device ID       A/N         AER Device ID       Permit Device ID       A/N       Process ID       Rule #											
Abbreviated Reporting         Certain combination of equipment code and fuel source may disqualify you from Abbreviated Reporting.         As part of Abbreviated Reporting, you Must only use AQMD Default Emission Factors.         If you select anything other than AQMD Default Emission Factors you will be disqualified from Abbreviated Reporting.         Click here to find out more details about Abbreviated Reporting and its possible benefits.         Step 1: Process       Optional: Mark as Completed         AER Device ID       Permit Device ID       A/N       Process ID											
Step 1: Process         Optional: Mark as Completed           AER Device ID         Permit Device ID         A/N         Process ID         Rule #         Activity         SCC											
AER Device ID Permit Device ID A/N Process ID Rule # Activity SCC											
Click here to <u>delete</u> this process. Step 2: Throughput											
Annual Throughput											
<u>Open</u>											
Step 3: Criteria Emissions (lbs)         Use Default Emission Factors if available.											
Pollutant         EF         Unit         Controlled EF         EF Data Source         Overall CE         Emissions											
Add New											
Step 4: Toxic (TAC/ODC) Emissions (lbs)         Use Default Emission Factors if available.											
TAC/ODC Group         CAS #         EF         Unit         Controlled EF         EF Data Source         Overall CE         Emissions											
Add New											

Add the throughput, throughput type, throughput origin, and throughput comment. Then, click the orange Save button.

Edit Throu	ıghput Inforn	natio	n - Other	Proces	ses	×				
AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Activity	SCC				
ES15			Ρ1	405	Metals and Alloys : Fabricated : Machining Operations : Arc Welding: General					
				Annua	al Throughput					
8,000.0000000 lbs										
Annual Thro	oughput	3,000.	.00000000		* Ibs • *					
Throughput	Туре	Input	★							
Throughput	Origin	Direct	measuren	nent	*					
Throughput	Comment L	ogbo	ok							
					Save Cance					

Click on the orange Add New button in Step 3.

Unit

EF

Controlled EF

- Dav	ck to Emission S	ource Process Ref		ce							
Other Processes											
This reporting screen is for reporting activity data for other processes used in your facility which were not covered in previous reporting screens. Please provide specific information for every associated emission source. Please start with Step 1, edits to Step 1 may cause data in the following steps to reset. Combustion emissions need to be reported separately under external or internal combustion process categories. Combined emissions can also be reported here; however, it must be substantiated to avoid double reporting. Detailed instructions are available by clicking on Help icon in the tool bar.											
Abbreviated Reporting         Certain combination of equipment code and fuel source may disqualify you from Abbreviated Reporting.         As part of Abbreviated Reporting, you Must only use AQMD Default Emission Factors.         If you select anything other than AQMD Default Emission Factors you will be disqualified from Abbreviated Reporting.         Click here to find out more details about Abbreviated Reporting and its possible benefits.    Step 1: Process											
Step 1	: Process					Optional	: Mark as Completed				
Step 1	: Process				_	Optional	I: Mark as Completed				
Step 1	AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Optional Activity	I: Mark as Completed				
Step 1	ES15	Permit Device ID	A/N	Process ID P1	Rule #	Optional Activity Metals and Alloys : Fabricated : Machining Operations : Arc Welding; Ger	I: Mark as Completed				
Step 1 Open Step 2	: Process AER Device ID ES15 : Throughput	Permit Device ID	A/N	Process ID P1	Rule #	Optional Activity Metals and Alloys : Fabricated : Machining Operations : Arc Welding: Gen Click here	i: Mark as Completed SCC neral to <u>delete</u> this process.				
Step 1 Open Step 2	: Process AER Device ID ES15 : Throughput	Permit Device ID	A/N	Process ID P1	Rule #	Optional Activity Metals and Alloys : Fabricated : Machining Operations : Arc Welding: Ger Click here Annual Throughput	I: Mark as Completed SCC neral to <u>delete</u> this process.				
Step 1 Open Step 2	: Process AER Device ID ES15 : Throughput	Permit Device ID	A/N	Process ID P1	Rule #	Optional Activity Metals and Alloys : Fabricated : Machining Operations : Arc Welding: Ger Click here Annual Throughput 8,000.00000000 lbs	I: Mark as Completed SCC neral to delete this process.				

EF Data Source

Overall CE

Pollutant

Add New

Emissions

Choose PM as the pollutant, and the emission factor, and chose AP-42 for the emission factor data source. Then click the orange Save button.

Open Criteria Emission Information - Other Processes											
AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Activity	SCC					
ES15			P1	405	Metals and Alloys : Fabricated : Machining Operations : Arc Welding: General						
				Annual	Throughput						
8,000.0000000 lbs											
Pollutant		PM	▼ *								
Emission Fa	actor (EF)	5.40	000000e-3	3	* Ibs/Ibs						
<ul> <li>Controlled EF value (mark checkbox if EF listed represents EF determined after control)</li> </ul>											
Overall Con	trol Efficiency										
Emission Fa	Emission Factor Comment										
	If not using <b>AQMD default</b> emission factor please provide detailed references in the Emission Factor Comment box above or upload file with the information. Processes without this information are subject to audit.										
Emission Fa	actor Data Source	AP-4	<b>\</b> ₽-42 <b>*</b>								
Emissions 4.3200000e+1 lbs											
					Save Cance						

Click on the orange Add New button in Step 4.

#### **Other Processes**

This reporting screen is for reporting activity data for other processes used in your facility which were not covered in previous reporting screens. Please provide specific information for every associated emission source. Please start with Step 1, edits to Step 1 may cause data in the following steps to reset. Combustion emissions need to be reported separately under external or internal combustion process categories. Combined emissions can also be reported here; however, it must be substantiated to avoid double reporting. Detailed instructions are available by clicking on Help icon in the tool bar.

٨b	Abbreviated Reporting												
AD	Dievialeu	kepol ting											
	ain compination	d Reporting you M	le and	I TUEL SOURCE	e may di Default	Squality you from	h Abbreviated Reporting.						
If yo	u select anythin	g other than AQMI	) Defa	ault Emissio	n Factor	s you will be disc	Jualified from Abbreviate	d Reporting.					
Click	Click <u>here</u> to find out more details about Abbreviated Reporting and its possible benefits.												
Step	1: Process							Optio	nal: Mark as	s Completed			
	AER Device ID	Permit Device ID	A/N	Process ID	Rule #		Activi	ty		SCC			
<u>Open</u>	ES15			P1	405	Metals and Alloys :	Fabricated : Machining Opera	ations : Arc Welding:	General				
	Click here to <u>delete</u> this process.												
Chan													
step.	2: Throughput	•											
						Annual Throu	Ighput						
Open						8.000.00000	00 lbs						
open						0,000.000000							
Step	3: Criteria Em	issions (lbs)						Use <u>Default Emi</u>	ssion Factor	<u>s</u> if available.			
	Pollutant	EF		Unit		Controlled EF	EF Data Source	Overall CE	Em	issions			
<u>Open</u>	PM	5.400000	000e-3	lbs / lbs		No	AP-42			4.32000000e+1			
Ad	d New												
Step 4	4: Toxic (TAC/	ODC) Emissions	(lbs)					Use <u>Default Emi</u>	ssion Factor	<u>s</u> if available.			
	TAC/ODC	Group CA	S #	EF Un	it	Controlled EF	EF Data Source	Overall	CE	Emissions			
Ad	d New												

Open Toxic (TAC/ODC) Emission Information - Other Processes								
A	ER Device ID	Permit Device ID	A/N	Process ID	Rule #	Activity	SCC	
ES15				P1	405	Metals and Alloys : Fabricated : Machining Operations : Arc Welding: General		
Annual Throughput 8,000.0000000 lbs								
	TAC/ODC Toxic Pollutants / Ozone Depleting Compounds							
	Pollutant		96	96 - Cobalt, includng compounds (insoluble)				
	TAC Group		-					
	CAS # (Pollutant)		-					
	Emission Factor (EF)		1.00	1.0000000e-6 * lbs/lbs				
			<ul> <li>Controlled EF value (mark checkbox if EF listed represents EF determined after control)</li> </ul>					
	Overall Control Efficiency							
	Emission Factor Comment							
		If not using <b>AQMD default</b> emission factor please provide detailed references in the Emission Factor Comment box above or upload file with the information. Processes without this information are subject to audit.						
	Emission Factor Data Source		AP-42 *					
Emissions			8.0000000e-3 lbs					
	Save Cancel							

Choose Cobalt, enter the emission factor and choose AP-42 for the emission factor data source.

Repeat for the other TAC emissions.