

**CABQ ENVIRONMENTAL HEALTH
DEPARTMENT AIR QUALITY PROGRAM**

**PERMIT MODIFICATION APPLICATION
SUMCO Phoenix Corporation
Albuquerque Facility**

Prepared By:

Jeff Homer – Corporate Director, EHS
Rafael Velazquez – EHS Manager

SUMCO Phoenix Corporation

19801 North Tatum Blvd
Phoenix, AZ 85233
(480) 473-6503
(480) 473-6563

Adam Erenstein – Manager of Consulting Services

TRINITY CONSULTANTS

9400 Holly Ave NE
Building 3, Suite B
Albuquerque, NM 87122
(505) 266-6611

April 2023

Project 223201.0228

Received April 5, 2023

AL





9400 Holly Ave NE, Bldg 3, Ste B, Albuquerque, NM 87122 / P 505.266.6611 / trinityconsultants.com

April 5, 2023

Ms. Angela Lopez
Air Quality Permitting Division
Environmental Health Department
PO Box 1293
Albuquerque, NM 87103

Re: 20.11.41 NMAC AND 20.11.41 NMAC Permit Modification Application – SUMCO Phoenix Corporation Albuquerque Facility

Dear Ms. Lopez,

On behalf of the SUMCO Phoenix Corporation we are submitting a revised Permit Modification application to modify Construction Permit (CP) Permit #0444-M5-1AR for their Albuquerque Facility.

The format and content of this submittal are consistent with the Air Quality Program's current policy regarding permit revision applications; it is a complete application package using the most current forms. Enclosed is one hard copy of the of the application form, the review fee form, all application attachments. Sumco request that an invoice be issued for the application fee. Please feel free to contact me at aerenstein@trinityconsultants.com if you have any questions regarding this application.

Thank you for your time and consideration,

TRINITY CONSULTANTS

Adam Erenstein
Manager of Consulting Services

Trinity Project File: 223201.0228

Executive Summary

Executive Summary: This application proposes the modification of ATC Permit #444-M5-1AR for Sumco's Albuquerque Facility located at 9401 San Mateo Blvd. NE, Albuquerque, NM 87113.

As part of this application, Sumco is seeking a modification to their existing permit (#444-M5-1AR) associated with the facility. The following updates are being requested with this application:

- Update the permit to include an accurate representation of the number of Chemical Vapor Deposition Units (CVDUs). Previously, CVDU's 12 and 13 were included in the permit but did not have any emissions. Emissions 12 and 13 have been removed with no change in emissions.
- The application is updating the permit to include an accurate representation of chemical usage for Hydrofluoric Acid, Arsine and Phosphine.
- Removal of Nitric Acid and Diborane from the permit. Neither are Hazardous Air Pollutants and should be removed from permit condition 1.F.3) and Table 2a.
- Based on the approved modeling waiver, we request that both humidifiers (units 10 & 11) may operate continuously and simultaneously.
 - With this change we request that that permit condition 1.F.4) be removed.
 - With this change we request that that permit condition 1.F.6) be removed.
 - With this change we request that that permit condition 3.D. be removed.
 - With this change we request that that permit condition 4.H. be removed.
 - With this change we request that that Table 2b, footnote 2, "Emission Units 10 and 11 are not allowed to operate simultaneously." be removed.
- We request that Permit condition 2.G. for unit FS1, FS2, and FS3, Acid Exhaust Scrubbers, is updated to reflect current operating conditions for this unit.
- Additionally, we request that the gas flow rate, pH, and pressure drop requirements are removed from Permit condition 2.H.
- A redline version of the current permit that represented the aforementioned changes is included with this application.

Application Forms





City of Albuquerque Environmental Health Department Air Quality Program



Construction Permit (20.11.41 NMAC) Application Checklist

This checklist must be returned with the application

Any person seeking a new air quality permit, a permit modification, or an emergency permit under 20.11.41 NMAC (Construction Permits) shall do so by filing a written application with the Albuquerque-Bernalillo County Joint Air Quality Program, which administers and enforces local air quality laws for the City of Albuquerque (“City”) and Bernalillo County (“County”), on behalf of the City Environmental Health Department (“Department”).

The Department will rule an application administratively incomplete if it is missing or has incorrect information. The Department may require additional information that is necessary to make a thorough review of an application, including but not limited to technical clarifications, emission calculations, emission factor usage, additional application review fees if any are required by 20.11.2 NMAC, and new or additional air dispersion modeling.

If the Department has ruled an application administratively incomplete three (3) times, the Department will deny the permit application. Any fees submitted for processing an application that has been denied will not be refunded. If the Department denies an application, a person may submit a new application and the fee required for a new application. The applicant has the burden of demonstrating that a permit should be issued.

The following are the minimum elements that shall be included in the permit application before the Department can determine whether an application is administratively complete and ready for technical review. It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.

At all times before the Department has made a final decision regarding the application, an applicant has a duty to promptly supplement and correct information the applicant has submitted in an application to the Department. The applicant’s duty to supplement and correct the application includes but is not limited to relevant information acquired after the applicant has submitted the application and additional information the applicant otherwise determines is relevant to the application and the Department’s review and decision. While the Department is processing an application, regardless of whether the Department has determined the application is administratively complete, if the Department determines that additional information is necessary to evaluate or make a final decision regarding the application, the Department may request additional information and the applicant shall provide the requested additional information.

NOTICE REGARDING PERMIT APPEALS: A person who has applied for or has been issued an air quality permit by the Department shall be an obligatory party to a permit appeal filed pursuant to 20.11.81 NMAC.

NOTICE REGARDING SCOPE OF A PERMIT: The Department’s issuance of an air quality permit only authorizes the use of the specified equipment pursuant to the air quality control laws, regulations and conditions. Permits relate to air quality control only and are issued for the sole purpose of regulating the emission of air contaminants from said equipment. Air quality permits are not a general authorization for the location, construction and/or operation of a facility, nor does a permit authorize any particular land use or other form of land entitlement. It is the applicant’s/permittee’s responsibility to obtain all other necessary permits from the appropriate agencies, such as the City Planning Department or County Department of Planning and Development Services, including but not limited to site plan approvals, building permits, fire department approvals and the like, as may be required by law for the location, construction and/or operation of a facility. For more information, please visit the City Planning Department website at <https://www.cabq.gov/planning> and the County Department of Planning and Development Services website at <https://www.bernco.gov/planning>.

The Applicant shall:

20.11.41.13(A) NMAC – Pre-Application Requirements:

Item	Completed	NA ¹	Waived ²
(1) Request a pre-application meeting with the Department using the pre-application meeting request form.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(2) Attend the pre-application meeting. Date of Pre-application meeting:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Not Applicable
2. It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.

20.11.41.13(B) NMAC – Applicant’s Public Notice Requirements:

Item	Included in Application	NA ¹	Waived ²
(1) Provide public notice in accordance with the regulation, including by certified mail or electronic copy to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Contact list of representative(s) of neighborhood associations and recognized coalitions cannot be more than three months old from the application submittal date.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Provide notice using the Notice of Intent to Construct form.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(2) In accordance with the regulation, post and maintain in a visible location a weather proof sign provided by the Department.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Not Applicable; For emergency permits, the public notice requirements in 20.11.41.24 NMAC shall apply instead.
2. It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.

The Permit Application shall include:

20.11.41.13(E) NMAC – Application Contents

Item	Included In Application	NA ¹	Waived ²
(1) A complete permit application on the most recent form provided by the Department.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(2) The application form includes:			
a. The owner’s name, street and post office address, and contact information;	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The facility/ operator’s name, street address and mailing address, if different from the owner;	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The consultant’s name, and contact information, if applicable;	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. All information requested on the application form is included (i.e., the form is complete).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(3) Date application is submitted.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(4) Sufficient attachments for the following:			
a. Ambient impact analysis using an atmospheric dispersion model approved by the U.S. Environmental Protection Agency, and the Department to demonstrate compliance with the applicable ambient air quality standards. See 20.11.01 NMAC. If you are modifying an existing source, the modeling must include the	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Item	Included In Application	NA ¹	Waived ²
emissions of the entire source to demonstrate the impact the new or modified source(s) will have on existing plant emissions.			
b. The air dispersion model has been executed pursuant to a protocol that was approved in advance by the Department.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Air dispersion modeling approved protocol date:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Basis or source for each emission rate (including manufacturer's specification sheet, AP-42 section sheets, test data, or corresponding supporting documentation for any other source used).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. All calculations used to estimate potential emission rates and controlled/proposed emissions.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Basis for the estimated control efficiencies and sufficient engineering data for verification of the control equipment operation, including if necessary, design, drawing, test report and factors which affect the normal operation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Fuel data for each existing and/or proposed piece of fuel burning equipment.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Anticipated maximum production capacity of the entire facility and the requested production capacity after construction and/or modification.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Stack and exhaust gas parameters for all existing and proposed emission stacks.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(5) An operational and maintenance strategy detailing:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. steps the applicant will take if a malfunction occurs that may cause emission of a regulated air contaminant to exceed a limit that is included in the permit;	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. the nature of emission during routine startup or shutdown of the source and the source's air pollution control equipment; and	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. the steps the application will take to minimize emissions during routine startup or shutdown.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(6) A map, such as a 7.5'-topographic quadrangle map published by the U.S. Geological Survey or a map of equivalent or greater scale, detail, and precision, including a City or County zone atlas map that shows the proposed location of each process equipment unit involved in the proposed construction, modification, or operation of the source, as applicable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(7) An aerial photograph showing the proposed location of each process equipment unit involved in the proposed construction, modification, relocation or technical revision of the source except for federal agencies or departments involved in national defense or national security as confirmed and agreed by the Department in writing.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(8) A complete description of all sources of regulated air contaminants and a process flow diagram depicting the process equipment unit or units at the facility, both existing and proposed, that are proposed to be involved in routine operations and from which regulated air contaminant emissions are expected to be emitted.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9) A full description of air pollution control equipment, including all calculations and the basis for all control efficiencies presented, manufacturer's specifications sheets, and site layout and assembly drawings; UTM (universal transverse mercator) coordinates shall be used to identify the location of each emission unit.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10) A description of the equipment or methods proposed by the applicant to be used for emission measurement.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(11) The maximum and normal operating time schedules of the source after completion of construction or modification, as applicable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(12) Any other relevant information as the Department may reasonably require, including without limitation:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Applicants shall provide documentary proof that the proposed air quality permitted use of the facility's subject property is allowed by the zoning designation of the City or County zoning laws, as applicable. Sufficient documentation includes: (i) a zoning certification from the City Planning Department or County Department of Planning and Development Services, as applicable, if the property is subject to City or County zoning jurisdiction; or (ii) a zoning verification from both planning	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item	Included In Application	NA ¹	Waived ²
departments if the property is not subject to City or County zoning jurisdiction. ³ A zone atlas map shall not be sufficient.			
(13) The signature of the applicant, operator, owner or an authorized representative, certifying to the accuracy of all information as represented in the application and attachments, if any.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(14) A check or money order for the appropriate application fee or fees required by 20.11.2 NMAC (Fees).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. *Not Applicable*
2. *It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.*
3. *For emergency permit applications, applicants are not required to submit documentation for the subject property's zoning designation.*



**City of Albuquerque – Environmental Health Department
Air Quality Program**



Please mail this application to **P.O. Box 1293, Albuquerque, NM 87103**
or hand deliver between 8:00 am – 5:00 pm Monday – Friday to:
3rd Floor, Suite 3023 – One Civic Plaza NW, Albuquerque, NM 87102
(505) 768-1972 aqd@cabq.gov

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Submittal Date: April 5, 2023

Owner/Corporate Information Check here and leave this section blank if information is exactly the same as Facility Information below.

Company Name: Sumco Phoenix Corporation			
Mailing Address: 19801 North Tatum Blvd	City: Phoenix	State: AZ	Zip: 85233
Company Phone: 480-473-6503 480-473-6563	Company Contact: Jeff Homer Rafael Velazquez		
Company Contact Title: Corporate Director, EHS EHS Manager	Phone: 480-473-6503 480-473-6563	E-mail: Jeff.homer@sumcousa.com, Rafael.velazquez@sumcousa.com	

Stationary Source (Facility) Information: Provide a plot plan (legal description/drawing of the facility property) with overlay sketch of facility processes, location of emission points, pollutant type, and distances to property boundaries.

Facility Name: Sumco Phoenix Corporation, Albuquerque Facility			
Facility Physical Address: 9401 San Mateo Blvd NE	City: Albuquerque	State: NM	Zip: 87113
Facility Mailing Address (if different): N/A	City: N/A	State: N/A	Zip: N/A
Facility Contact: Jeff Homer Rafael Velazquez	Title: Corporate Director, EHS EHS Manager		
Phone: 480-473-6503 480-473-6563	E-mail: Jeff.homer@sumcousa.com, Rafael.velazquez@sumcousa.com		
Authorized Representative Name ¹ : Jeff Homer Rafael Velazquez	Authorized Representative Title: Corporate Director, EHS EHS Manager		

Billing Information Check here if same contact and mailing address as corporate Check here if same as facility

Billing Company Name: N/A			
Mailing Address: N/A	City: N/A	State: N/A	Zip: N/A
Billing Contact: N/A	Title: N/A		
Phone: N/A	E-mail: N/A		

Preparer/Consultant(s) Information Check here and leave section blank if no Consultant used or Preparer is same as Facility Contact.

Name: Adam Erenstein	Title: Manager of Consulting Services		
Mailing Address: 9400 Holly Ave, Buidling 3, Suite B	City: Albuquerque	State: NM	Zip: 87122
Phone: (505) 266-6611	Email: aerenstein@trinityconsultants.com		

1. See 20.11.41.13(E)(13) NMAC.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

General Operation Information (if any question does not pertain to your facility, type N/A on the line or in the box)

Permitting action being requested (please refer to the definitions in 20.11.40 NMAC or 20.11.41 NMAC):				
<input type="checkbox"/> New Permit	<input checked="" type="checkbox"/> Permit Modification Current Permit #: 0444-M5-1AR		<input type="checkbox"/> Technical Permit Revision Current Permit #:	<input type="checkbox"/> Administrative Permit Revision Current Permit #:
<input type="checkbox"/> New Registration Certificate	<input type="checkbox"/> Modification Current Reg. #:	<input type="checkbox"/> Technical Revision Current Reg. #:	<input type="checkbox"/> Administrative Revision Current Reg. #:	
UTM coordinates of facility (Zone 13, NAD 83): 35 11' 38.5", 106 35'15"				
Facility type (<i>i.e.</i> , a description of your facility operations): Silicon Wafer Manufacturing				
Standard Industrial Classification (SIC Code #): 3674		North American Industry Classification System (NAICS Code #): 334413		
Is this facility currently operating in Bernalillo County? Yes		If YES , list date of original construction: 3/30/95 If NO , list date of planned startup:		
Is the facility permanent? Yes		If NO , list dates for requested temporary operation: From Through		
Is the facility a portable stationary source? No		If YES , is the facility address listed above the main permitted location for this source?		
Is the application for a physical or operational change, expansion, or reconstruction (<i>e.g.</i> , altering process, or adding, or replacing process or control equipment, etc.) to an existing facility? Yes				
Provide a description of the requested changes: Updating the representation and naming convention of existing CVDU emission units; Updating permit Condition for scrubbers (exhaust scrubber) for water flow rates, spray head pressure and removal of pH limit which is not applicable. Removing humidifier use restriction and monitoring requirements. Updating HF, Arsine and Phosphine usage. Removing Diborane and Nitric acid from the permit. Replacing one cooling tower.				
What is the facility's operation? <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent <input type="checkbox"/> Batch				
Estimated percent of production/operation:	Jan-Mar: 25	Apr-Jun: 25	Jul-Sep: 25	Oct-Dec: 25
Requested operating times of facility:	24 hours/day	7 days/week	4.34 weeks/month	12 months/year
Will there be special or seasonal operating times other than shown above? This includes monthly- or seasonally-varying hours. No				
If YES , please explain: N/A				
List raw materials processed: Silicon Wafers				
List saleable item(s) produced: Epitaxial Wafers				

USE INSTRUCTIONS: For the forms on the following pages, please do not alter or delete the existing footnotes or page breaks. If additional footnotes are needed then add them to the end of the existing footnote list for a given table. Only update the rows and cells within tables as necessary for your project. Unused rows can be deleted from tables. If multiple scenarios will be represented then the Uncontrolled and Controlled Emission Tables, and other tables as needed, can be duplicated and adjusted to indicate the different scenarios.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Regulated Emission Sources Table

(E.g., Generator-Crusher-Screen-Conveyor-Boiler-Mixer-Spray Guns-Saws-Sander-Oven-Dryer-Furnace-Incinerator-Haul Road-Storage Pile, etc.) Match the Units listed on this Table to the same numbered line if also listed on Emissions Tables & Stack Table.

Unit Number and Description ¹	Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date ²	Process Rate or Capacity (Hp, kW, Btu, ft ³ , lbs, tons, yd ³ , etc.) ³	Fuel Type
1 Cleaning Area Quartz Cleaning Process Clean NAC-1 Process Clean NAC-2 Process Clean SMS-1 Process Clean SMS-2 Process Clean SMS-3	N/A	N/A	N/A	N/A	~1990 -2000	N/A	N/A	N/A
2 Process Clean Dopant VMB	N/A	N/A	N/A	N/A	~1990 -2000	N/A	N/A	N/A
3 Chemical Vapor Deposition Unit (CVDU)	N/A	See CVDU Table	N/A	N/A	~1990 -2023	N/A	N/A	N/A
4 Chemical Vapor Deposition Unit (CVDU)	N/A	See CVDU Table	N/A	N/A	~1990 -2023	N/A	N/A	N/A
5 Natural Gas Boiler	Unilux	ZF 800W	N/A	2018/2019	2019	N/A	8.27 MMBtu/hr	Natural Gas
6 Chemical Vapor Deposition Unit (CVDU)	N/A	See CVDU Table	N/A	N/A	~1990 -2023	N/A	N/A	N/A
8 Diesel Generator	Cummins	NTA8550G3	N/A	1994	1994/1995	N/A	535 hp/399 KW	Diesel
9 Natural Gas Boiler	Unilux	ZF-800W-G	52825	2013/2014	2014	N/A	8.27 MM Btu/hr	Natural Gas
10 Natural Gas Fired Steam Humidifier	PURE Humidifier Company	GXDDR-8	N/A	2020	3/2022	N/A	0.8 MMBtu/hr	Natural Gas
11 Natural Gas Fired Steam Humidifier	PURE Humidifier Company	GXDDR-8	12694-H2	N/A	~2007	N/A	0.8 MMBtu/hr	Natural Gas
14 Cooling Tower	BAC	S3E-1222- 07O	U1748275 01	2017	2017	N/A	1656 gal/min	N/A
15 Cooling Tower	BAC	VP1-216- 220W	U2024754 01	2020	2020	N/A	500 gal/min	N/A
16 Cooling Tower	BAC	3552C-MM	U1474317 0201	2014	2014	N/A	1656 gal/min	N/A
17 Cooling Tower	BAC	F1-1662- DMCX	96200724	TBD	TBD	N/A	500 gal/min	N/A
18 Cooling Tower	BAC	S3E-1222- 07P	U1886091 01	2018	2018	N/A	2100 gal/min	N/A

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

- Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
- To determine whether a unit has been modified, evaluate if changes have been made to the unit that impact emissions or that trigger modification as defined in 20.11.41.7(U) NMAC. If not, put N/A.
- Basis for Equipment Process Rate or Capacity (e.g., Manufacturer's Data, Field Observation/Test, etc.) _____
Submit information for each unit as an attachment.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

CVDU Table			
Reactors	Stack 3	Stack 4	Stack 6
Annie	X		
Ansel	X		
Billy	X		
Buffalo	X		
Calamity	X		
Cesar	X		
Diego	X		
Doc	X		
EE		X	
El Guapo	X		
FF		X	
Frank	X		
Jesse	X		
GG		X	
Goyathly		X	
Hondo		X	
Isleta		X	
Kachina		X	
Lobo		X	
Maverick			X
Navajo			X
Outlaw			X
Phoenix			X
Quickdraw			X
Rio			X
Santa Fe			X
Tombstone			X
Undertaker			X
Vaquero			X
Wyatt			X
XX			X
Yucca			X
Zorro			X

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Basis for Equipment Process Rate or Capacity

Cleaning Area, Quartz Cleaning, Process Clean SMS (Unit 1)

This unit consists of emissions cleaning acids contained in baths or wipes used on various quartz parts and or wafers. Any evaporative losses of chemicals (Hydrofluoric acid) would be routed to exhaust scrubbers FS1 and FS2, which has a 99% destruction efficiency based on AP-42 Table 8.7-2 (see caustic scrubber). Evaporative losses are conservatively estimated using non-recovered chemical usages reported in the "Consumed Hazardous Air Pollutant Table."

Process Clean Dopant VMB (Unit 2)

This unit consists of compressed gas dopant containments and manifolds. If dopant gases (Arsine and Phosphine) are lost in the room they are routed to exhaust scrubber FS3, which has a 99% destruction efficiency based on AP-42 Table 8.7-2 (see caustic scrubber). Evaporative losses are conservatively estimated using non-recovered chemical usages reported in the "Consumed Hazardous Air Pollutant Table."

Chemical Vapor Deposition Units (Units 3, 4, and 6)

These units consist of the reactors and Airguard scrubbers. Anhydrous Hydrogen Chloride, H₂, Dopant gases enter the reactor chamber and any fumes and or gas that is not consumed in the process is handled by the Airguard units, which have a 99% destruction efficiency based on the manufacturer specifications.

Natural Gas Boilers (Units 5 and 9)

Manufacturer data is included in this application, which reports the operating capacity of these units.

Diesel Generator (Unit 8)

Emissions and stack parameters for this unit are not changing from the existing permit. Emissions were estimated using emission factors from AP-42 Table 3.2-2. A 20% safety factor was assumed for NO_x, VOC, SO₂ and PM emissions. A 70% safety factor was assumed for CO emissions.

Natural Gas-Fired Steam Humidifiers (Units 10 and 11)

Manufacturer data is included in this application, which reports the operating capacity of these units.

Cooling Towers (Units 14 to 18)

Cooling tower emissions were calculated using guidance provided in the NMED technical memorandum for "Calculating TSP, PM₁₀, and PM_{2.5} from Cooling Towers" dated 9/9/2013. The Albuquerque Bernalillo County Water Utility Authority requires that the water in the cooling towers not have TDS concentrations excess of 350 ppm. SUMCO conservatively estimates the circulation rates for the cooling towers. These values are used to conservatively estimate emissions from the cooling towers.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Emissions Control Equipment Table

Control Equipment Units listed on this Table should either match up to the same Unit number as listed on the Regulated Emission Sources, Controlled Emissions and Stack Parameters Tables (if the control equipment is integrated with the emission unit) or should have a distinct Control Equipment Unit Number and that number should then also be listed on the Stack Parameters Table.

Control Equipment Unit Number and Description		Controlling Emissions for Unit Number(s)	Manufacturer	Model # Serial #	Date Installed	Controlled Pollutant(s)	% Control Efficiency ¹	Method Used to Estimate Efficiency	Rated Process Rate or Capacity or Flow
FS1	Acid Exhaust Scrubber	1	Beverly Pacific	N/A	Unknown	HF, Anhydrous Hydrogen Chloride	99%	AP-42 Table 8.7-2	20,000 ACFM
FS2	Acid Exhaust Scrubber	1	Beverly Pacific	N/A	Unknown	HF, Anhydrous Hydrogen Chloride	99%	AP-42 Table 8.7-2	20,000 ACFM
FS3	Exhaust Scrubber	2	Beverly Pacific	N/A	Unknown	AsH3, PH3	99%	AP-42 Table 8.7-2	11,000 ACFM
CVDU	CVDU Scrubbers	3, 4, 6	Air Guard	1997	Unknown	HCl	99%	Manufacturer data	2.0 ACFM

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Control Equipment % Efficiency (e.g., Manufacturer's Data, Field Observation/Test, AP-42, etc.). _____
Submit information for each unit as an attachment.

Basis for Control Equipment % Efficiency

Acid Exhaust Scrubbers (Units FS1 to FS3)

AP-42 Table 8.7-2 (See Caustic Scrubber Control Efficiency)

CVDU Scrubber (Unit CVDU)

Manufacturer data

Exempted Sources and Exempted Activities Table

See 20.11.41 NMAC for exemptions.

Unit Number and Description	Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date ¹	Process Rate or Capacity (Hp, kW, Btu, ft ³ , lbs, tons, yd ³ , etc.) ²	Fuel Type
-----------------------------	--------------	---------	----------	------------------	-------------------	--------------------------------	--	-----------

There are no exempted sources or activities at this facility

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. To determine whether a unit has been modified, evaluate if changes have been made to the unit that impact emissions or that trigger modification as defined in 20.11.41.7(U) NMAC. Also, consider if any changes that were made alter the status from exempt to non-exempt. If not, put N/A.
2. Basis for Equipment Process Rate or Capacity (e.g., Manufacturer's Data, Field Observation/Test, etc.) _____
Submit information for each unit as an attachment.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Uncontrolled Emissions Table

(Process potential under physical/operational limitations during a 24 hr/day and 365 day/year = 8760 hrs)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Controlled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number*	Nitrogen Oxides (NO _x)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO ₂)		Particulate Matter ≤ 10 Microns (PM ₁₀)		Particulate Matter ≤ 2.5 Microns (PM _{2.5})		Hazardous Air Pollutants (HAPs)		Method(s) used for Determination of Emissions (AP-42, Material Balance, Field Tests, etc.)
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	
1	-	-	-	-	-	-	-	-	-	-	-	-	0.02	0.088	Material Balance
2	-	-	-	-	-	-	-	-	-	-	-	-	2.85E-4	1.25E-3	Material Balance
3, 4, 6	-	-	-	-	-	-	-	-	-	-	-	-	0.32	1.41	Material Balance
5 ¹	0.81	3.55	0.68	2.98	0.045	0.20	0.0046	0.020	0.062	0.27	0.062	0.27	-	-	AP-42 Tables 1.4-1 and 2
9 ¹	0.81	3.55	0.68	2.98	0.045	0.20	0.0046	0.020	0.062	0.27	0.062	0.27	-	-	AP-42 Tables 1.4-1 and 2
8	19.90	4.98	6.08	1.52	1.59	0.40	1.32	0.33	1.41	0.35	1.41	0.35	-	-	AP-42 Table 3.3-2 with Safety Factors
10	0.078	0.34	0.066	0.29	0.0043	0.019	4.48E-04	0.0020	0.0060	0.026	0.0060	0.026	-	-	AP-42 Tables 1.4-1 and 2
11	0.078	0.34	0.066	0.29	0.0043	0.019	4.48E-04	0.0020	0.0060	0.026	0.0060	0.026	-	-	AP-42 Tables 1.4-1 and 2
14	-	-	-	-	-	-	-	-	0.051	0.22	2.98E-04	0.0013	-	-	NMED Technical Memorandum
15	-	-	-	-	-	-	-	-	0.015	0.068	9.01E-05	3.95E-04	-	-	NMED Technical Memorandum
16	-	-	-	-	-	-	-	-	0.051	0.22	2.98E-04	0.0013	-	-	NMED Technical Memorandum
17	-	-	-	-	-	-	-	-	0.015	0.068	9.01E-05	3.95E-04	-	-	NMED Technical Memorandum
18	-	-	-	-	-	-	-	-	0.065	0.28	3.78E-04	0.0017	-	-	NMED Technical Memorandum
Totals of Uncontrolled Emissions	21.68	12.77	7.57	8.06	1.68	0.82	1.33	0.37	1.75	1.81	1.55	0.95	0.34	1.49	

¹Only one boiler can be physically operated simultaneously.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

*A permit is required and this application along with the additional checklist information requested on the Permit Application checklist must be provided if:

- (1) any one of these process units or combination of units, has an uncontrolled emission rate greater than or equal to (\geq) 10 lbs/hr or 25 tons/yr for any of the above pollutants, excluding HAPs, based on 8,760 hours of operation; or
- (2) any one of these process units or combination of units, has an uncontrolled emission rate \geq 2 tons/yr for any single HAP or \geq 5 tons/yr for any combination of HAPs based on 8,760 hours of operation; or
- (3) any one of these process units or combination of units, has an uncontrolled emission rate \geq 5 tons/yr for lead (Pb) or any combination of lead and its compounds based on 8,760 hours of operation; or
- (4) any one of the process units or combination of units is subject to an Air Board or federal emission limit or standard.

* If all of these process units, individually and in combination, have an uncontrolled emission rate less than ($<$) 10 lbs/hr or 25 tons/yr for all of the above pollutants (based on 8,760 hours of operation), but $>$ 1 ton/yr for any of the above pollutants, then a source registration is required. A Registration is required, at minimum, for any amount of HAP emissions. Please complete the remainder of this form.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Controlled Emissions Table

(Based on current operations with emission controls OR requested operations with emission controls)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Uncontrolled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number	Nitrogen Oxides (NO _x)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO ₂)		Particulate Matter ≤ 10 Microns (PM ₁₀)		Particulate Matter ≤ 2.5 Microns (PM _{2.5})		Hazardous Air Pollutants (HAPs)		Control Method	% Efficiency ¹
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr		
1	-	-	-	-	-	-	-	-	-	-	-	-	0.020	0.086	Material Balance	99%
2	-	-	-	-	-	-	-	-	-	-	-	-	2.14E-4	9.38E-4	Material Balance	99%
3, 4, 6	-	-	-	-	-	-	-	-	-	-	-	-	0.32	1.41	Material Balance	99%
5 & 9 ¹	0.81	3.55	0.68	2.98	0.045	0.20	0.0050	0.020	0.062	0.27	0.062	0.27	-	-	N/A	N/A
8	19.90	4.98	6.08	1.52	1.59	0.40	1.32	0.33	1.41	0.35	1.41	0.35	-	-	N/A	N/A
10	0.078	0.34	0.066	0.29	0.0043	0.019	4.48E-04	0.0020	0.0060	0.026	0.0060	0.026	-	-	N/A	N/A
11	0.078	0.34	0.066	0.29	0.0043	0.019	4.48E-04	0.0020	0.0060	0.026	0.0060	0.026	-	-	N/A	N/A
14	-	-	-	-	-	-	-	-	0.051	0.22	2.98E-04	0.0013	-	-	N/A	N/A
15	-	-	-	-	-	-	-	-	0.015	0.068	9.01E-05	3.95E-04	-	-	N/A	N/A
16	-	-	-	-	-	-	-	-	0.051	0.22	2.98E-04	0.0013	-	-	N/A	N/A
17	-	-	-	-	-	-	-	-	0.015	0.068	9.01E-05	3.95E-04	-	-	N/A	N/A
18	-	-	-	-	-	-	-	-	0.065	0.28	3.78E-04	0.0017	-	-	N/A	N/A
Totals of Controlled Emissions	20.87	9.21	6.89	5.08	1.64	0.63	1.32	0.35	1.68	1.53	1.49	0.68	0.34	1.49		

¹Only one boiler can be physically operated simultaneously. Accordingly, the emissions reported for Units 5 & 9 represent the emissions for a single boiler.

1. Basis for Control Method % Efficiency (e.g., Manufacturer's Data, Field Observation/Test, AP-42, etc.).
Submit information for each unit as an attachment.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Hazardous Air Pollutants (HAPs) Emissions Table

Report the Potential Emission Rate for each HAP from each source on the Regulated Emission Sources Table that emits a given HAP. Report individual HAPs with ≥ 1 ton/yr total emissions for the facility on this table. Otherwise, report total HAP emissions for each source that emits HAPs and report individual HAPs in the accompanying application package in association with emission calculations. If this application is for a Registration solely due to HAP emissions, report the largest HAP emissions on this table and the rest, if any, in the accompanying application package.

Unit Number	Hydrofluoric Acid		Anhydrous Hydrogen Chloride		Phosphine		Arsine					
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	0.020	0.086										
2					7.13E-05	3.13E-04	1.43E-04	6.25E-04				
3, 4, 6			0.32	1.41	7.13E-05	3.13E-04	1.43E-04	6.25E-04				
Totals of HAPs for all units:	0.020	0.086	0.32	1.41	1.43E-04	6.25E-04	2.8E-04	1.25E-03				

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

Use Instructions: Copy and paste the HAPs table here if need to list more individual HAPs.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Consumed Hazardous Air Pollutant Table*

Product Categories (Coatings, Solvents, Thinners, etc.)	Hazardous Air Pollutant (HAP), or Volatile Hazardous Air Pollutant (VHAP) Primary To The Representative As Consumed Product	Chemical Abstract Service (CAS) Number of HAP or VHAP from Representative As Consumed Product	HAP or VHAP Concentration of Representative As Consumed Product (pounds/gallon, or %)	Concentration Determination (CPDS, SDS, etc.) ¹	Total Product Consumed For Category	(-)	Quantity of Product Recovered & Disposed For Category	(=)	Total Product Usage For Category
1. Cleaning Acid	Hydrofluoric Acid	7664-39-3	49%	SDS	- lb/yr	(-)	- lb/yr	(=)	- lb/yr
					3,000 gal/yr		300 gal/yr		2,700 gal/yr
2. Process Acid	Anhydrous Hydrogen Chloride	7647-01-0	100%	SDS	225,000 lb/yr	(-)	22,500 lb/yr	(=)	202,500 lb/yr
					- gal/yr		- gal/yr		- gal/yr
3. Dopant	Phosphine in Hydrogen	7803-51-2	100%	SDS	100 lb/yr	(-)	10 lb/yr	(=)	90 lb/yr
					- gal/yr		- gal/yr		- gal/yr
4. Dopant	Arsine in Hydrogen	7784-42-1	100%	SDS	200 lb/yr	(-)	20 lb/yr	(=)	180 lb/yr
					- gal/yr		- gal/yr		- gal/yr
TOTALS					225,300 lb/yr	(-)	22,540 lb/yr	(=)	202,770 lb/yr
					3,000 gal/yr		300 gal/yr		2,700 gal/yr

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

NOTE: Product Consumed, recovery/disposal and usage should be converted to the units listed in this table. If units cannot be converted please contact the Air Quality Program prior to making changes to this table.

1. Submit, as an attachment, information on one (1) product from each Category listed above which best represents the average of all the products Consumed in that Category. CPDS = Certified Product Data Sheet; SDS = Safety Data Sheet

*** A Registration is required, at minimum, for any amount of HAP or VHAP emission.**

Emissions from Consumed HAP usage should be accounted for on previous tables as appropriate.

A permit may be required for these emissions if the source meets the requirements of 20.11.41 NMAC.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Material and Fuel Storage Table

(E.g., Tanks, barrels, silos, stockpiles, etc.)

Storage Equipment		Product Stored	Capacity (bbls, tons, gals, acres, etc.)	Above or Below Ground	Construction (Welded, riveted) & Color	Installation Date	Loading Rate ¹	Offloading Rate ¹	True Vapor Pressure	Control Method	Seal Type	% Eff. ²
1	Hydrogen Storage Tank	H₂	10,000 gal	Above Ground	Horizontal, White	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Loading/Offloading Rate (e.g., Manufacturer’s Data, Field Observation/Test, etc.). **N/A – there are no emissions of regulated pollutants associated with the hydrogen storage tank.**

Submit information for each unit as an attachment.

2. Basis for Control Method % Efficiency (e.g., Manufacturer’s Data, Field Observation/Test, AP-42, etc.). **N/A – there are no emissions of regulated pollutants associated with the hydrogen storage tank.**

Submit information for each unit as an attachment.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Stack Parameters Table

If any equipment from the Regulated Emission Sources Table is also listed in this Stack Table, use the same numbered line for the emission unit on both tables to show the association between the Process Equipment and its stack.

Unit Number and Description		Pollutant (CO, NOx, PM ₁₀ , etc.)	UTM Easting (m)	UTM Northing (m)	Stack Height (ft)	Stack Exit Temp. (°F)	Stack Velocity (fps)	Stack Flow Rate (acfm)	Stack Inside Diameter (ft)	Stack Type
FS1	Controls Unit 1	HF, Anhydrous Hydrogen Chloride	355457.91	3895689.71	56	70	21.29	9030	3	Vertical
FS2	Controls Unit 1	HF, Anhydrous Hydrogen Chloride	3895689.71	3895736.88	56	70	0.02	1.45	2	Vertical
FS3	Controls Unit 2	AsH ₃ , PH ₃	355458.94	3895734.64	56	77	0.02	1.45	2	Vertical
CVDUs	Controls Unit 3,4,6	Anhydrous Hydrogen Chloride, AsH ₃ , PH ₃	355458.72	3895723.83	56	77	0.02	1.45	2	Vertical
			355458.77	3895722.36						
			355457.97	3895691.72						
5	Natural Gas Boiler	NO _x , CO, VOC, SO ₂ , PM ₁₀ , PM _{2.5}	355457.00	3895696.00	55.35	600	32.93	6207	2	Vertical
8	Diesel Generator	NO _x , CO, VOC, SO ₂ , PM ₁₀ , PM _{2.5}	355450.00	3895759.00	10	980	98.29	3190	0.83	Vertical
9	Natural Gas Boiler	NO _x , CO, VOC, SO ₂ , PM ₁₀ , PM _{2.5}	355457.00	3895696.00	55.35	600	32.93	6207	2	Vertical
10	Natural Gas Humidifier	NO _x , CO, VOC, SO ₂ , PM ₁₀ , PM _{2.5}	355493.00	3895719.00	29.66	300	83.89	431	0.33	Vertical
11	Natural Gas Humidifier	NO _x , CO, VOC, SO ₂ , PM ₁₀ , PM _{2.5}	355493.00	3895717.00	29.66	300	83.98	431	0.33	Vertical
14	Cooling Tower	PM ₁₀ , PM _{2.5}	355450.00	3895689.48	15	Ambient	21.99	N/A	10	Vertical
15	Cooling Tower	PM ₁₀ , PM _{2.5}	355448.15	3895700.77	18	Ambient	21.99	N/A	10	Vertical
16	Cooling Tower	PM ₁₀ , PM _{2.5}	355450.50	3895693.33	15	Ambient	21.99	N/A	10	Vertical
17	Cooling Tower	PM ₁₀ , PM _{2.5}	355448.07	3895707.24	18	Ambient	21.99	N/A	10	Vertical
18	Cooling Tower	PM ₁₀ , PM _{2.5}	355450.00	3895715.00	30	Ambient	21.99	N/A	10	Vertical

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Certification

NOTICE REGARDING SCOPE OF A PERMIT: The Environmental Health Department's issuance of an air quality permit only authorizes the use of the specified equipment pursuant to the air quality control laws, regulations and conditions. Permits relate to air quality control only and are issued for the sole purpose of regulating the emission of air contaminants from said equipment. Air quality permits are not a general authorization for the location, construction and/or operation of a facility, nor does a permit authorize any particular land use or other form of land entitlement. It is the applicant's/permittee's responsibility to obtain all other necessary permits from the appropriate agencies, such as the City of Albuquerque Planning Department or Bernalillo County Department of Planning and Development Services, including but not limited to site plan approvals, building permits, fire department approvals and the like, as may be required by law for the location, construction and/or operation of a facility. For more information, please visit the City of Albuquerque Planning Department website at <https://www.cabq.gov/planning> and the Bernalillo County Department of Planning and Development Services website at <https://www.bernco.gov/planning>.

NOTICE REGARDING ACCURACY OF INFORMATION AND DATA SUBMITTED: Any misrepresentation of a material fact in this application and its attachments is cause for denial of a permit or revocation of part or all of the resulting registration or permit, and revocation of a permit for cause may limit the permittee's ability to obtain any subsequent air quality permit for ten (10) years. Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan or other document filed or required to be maintained under the Air Quality Control Act, NMSA 1978 §§ 74-2-1 to 74-2-17, is guilty of a misdemeanor and shall, upon conviction, be punished by a fine of not more than ten thousand dollars (\$10,000) per day per violation or by imprisonment for not more than twelve months, or by both.

I, the undersigned, hereby certify that I have knowledge of the information and data represented and submitted in this application and that the same is true and accurate, including the information and data in any and all attachments, including without limitation associated forms, materials, drawings, specifications, and other data. I also certify that the information represented gives a true and complete portrayal of the existing, modified existing, or planned new stationary source with respect to air pollution sources and control equipment. I understand that there may be significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. I also understand that the person who has applied for or has been issued an air quality permit by the Department is an obligatory party to a permit appeal filed pursuant to 20.11.81 NMAC. Further, I certify that I am qualified and authorized to file this application, to certify the truth and accuracy of the information herein, and bind the source. Moreover, I covenant and agree to comply with any requests by the Department for additional information necessary for the Department to evaluate or make a final decision regarding the application.

Signed this 4 day of April, 2023

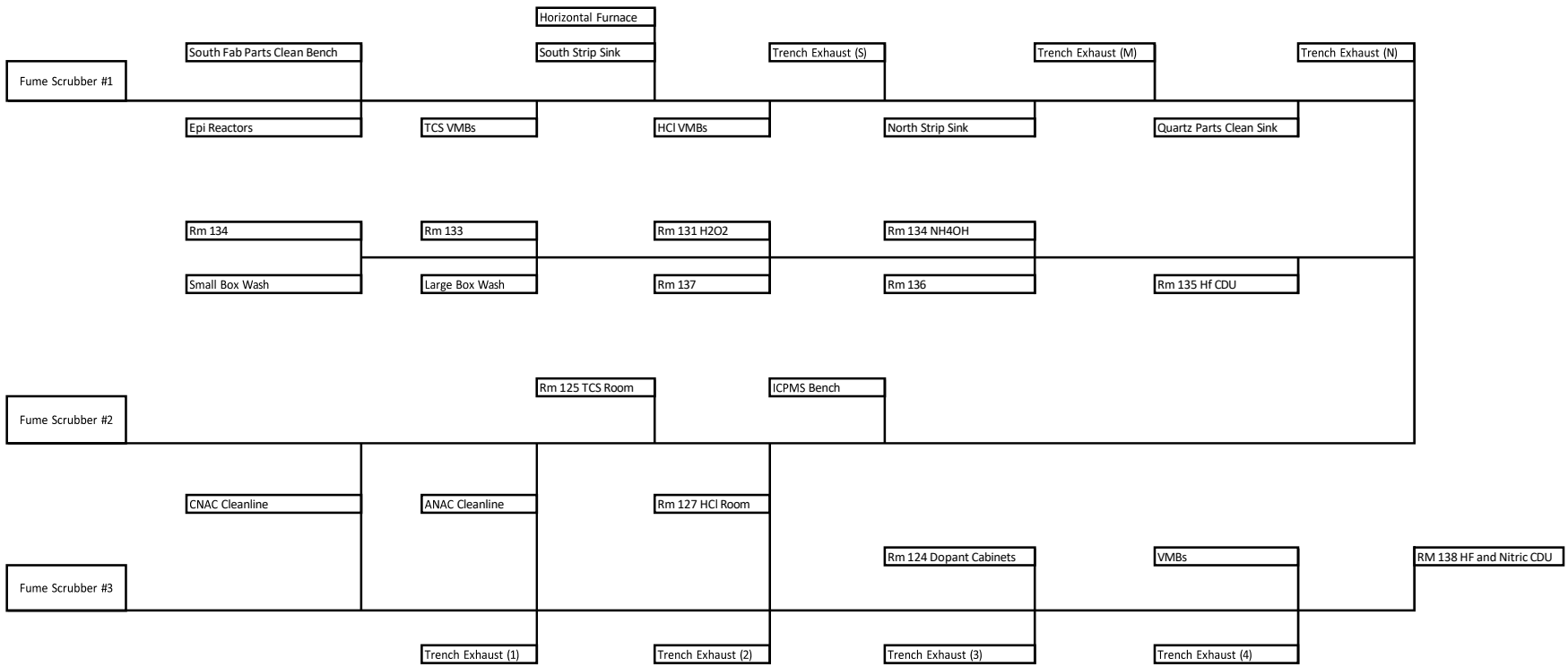
Jeff Homer
Print Name

Corporate Director, EHS
Print Title

Jeff Homer
Signature

Role: Owner Operator
 Other Authorized Representative

SPQ Fume Scrubber Block Diagram





Pre-Permit Application Meeting Request Form

Air Quality Program- Environmental Health Department

Please complete appropriate boxes and email to aqd@cabq.gov or mail to:

Environmental Health Department
 Air Quality Program
 P.O. Box 1293
 Room 3047
 Albuquerque, NM 87103

Name:	Sumco - Albuquerque
Company/Organization:	Sumco Phoenix Corporation
Point of Contact: (phone number and email): Preferred form of contact (circle one): Phone E-mail <input checked="" type="checkbox"/>	Adam Erenstein: (505) 266-6611; aerenstein@trinityconsultants.com Jeff Homer: (480)-473-6503; Jeff.Homer@sumcousa.com Rafael Velazquez: (480)-473-6563; Rafael.Velazquez@sumcousa.com
Preferred meeting date/times:	TBD
Description of Project:	Sumco is proposing a Permit Modification to the Sumco – Albuquerque facility which is authorized under ATC 0444-M5-1AR. The primary scope of the proposed application would be as follows: <ul style="list-style-type: none"> • Updating humidifier operating hour limitations and associated permit conditions. • Updating HF, Arsine and Phosphine Usage • Updating permit Condition for scrubbers (exhaust scrubber) for water flow rates, spray head pressure and removal of pH limit which is not applicable. • Removal of emission units 1, 2, 3, 4, 6, 12 and 13 from the permit. Units 1, 2, 3, 4, 6, 12 and 13 will all remain as part of the facility and process; however these units are not emission sources and do not have emission limits associated with them in the permit. Chemical usage is a source of HAP emissions at the facility, and the chemical usage is tracked within the current permit. We propose to replace all Process Clean, Process Clean Dopant, CVDUs with a single unit, unit 1, Chemical Usage.

City of Albuquerque- Environmental Health Department
 Air Quality Program- Permitting Section
 Phone: (505) 768-1972 Email: aqd@cabq.gov



City of Albuquerque

Environmental Health Department

Air Quality Program



Permit Application Review Fee Instructions

All source registration, authority-to-construct, and operating permit applications for stationary or portable sources shall be charged an application review fee according to the fee schedule in 20.11.2 NMAC. These filing fees are required for both new construction, reconstruction, and permit modifications applications. Qualified small businesses as defined in 20.11.2 NMAC may be eligible to pay one-half of the application review fees and 100% of all applicable federal program review fees.

Please fill out the permit application review fee checklist and submit with a check or money order payable to the "City of Albuquerque Fund 242" and either:

1. be delivered in person to the Albuquerque Environmental Health Department, 3rd floor, Suite 3023 or Suite 3027, Albuquerque-Bernalillo County Government Center, south building, One Civic Plaza NW, Albuquerque, NM or,
2. mailed to Attn: Air Quality Program, Albuquerque Environmental Health Department, P.O. Box 1293, Albuquerque, NM 87103.

The department will provide a receipt of payment to the applicant. The person delivering or filing a submittal shall attach a copy of the receipt of payment to the submittal as proof of payment. Application review fees shall not be refunded without the written approval of the manager. If a refund is requested, a reasonable professional service fee to cover the costs of staff time involved in processing such requests shall be assessed. Please refer to 20.11.2 NMAC (effective January 10, 2011) for more detail concerning the "Fees" regulation as this checklist does not relieve the applicant from any applicable requirement of the regulation.



City of Albuquerque

Environmental Health Department

Air Quality Program



Permit Application Review Fee Checklist Effective January 1, 2023 – December 31, 2023

Please completely fill out the information in each section. Incompleteness of this checklist may result in the Albuquerque Environmental Health Department not accepting the application review fees. If you should have any questions concerning this checklist, please call 768-1972.

I. COMPANY INFORMATION:

Company Name	SUMCO Phoenix Corporation		
Company Address	9401 San Mateo Blvd. NE, Albuquerque, NM 87113		
Facility Name	SUMCO Phoenix Corporation		
Facility Address	9401 San Mateo Blvd. NE, Albuquerque, NM 87113		
Contact Person	Jeff Homer, Rafael Velazquez		
Contact Person Phone Number	480-473-6503, 480-473-6563		
Are these application review fees for an existing permitted source located within the City of Albuquerque or Bernalillo County?	Yes		
If yes, what is the permit number associated with this modification?	Permit #0444-M5-1AR		
Is this application review fee for a Qualified Small Business as defined in 20.11.2 NMAC? (See Definition of Qualified Small Business on Page 4)			No

II. STATIONARY SOURCE APPLICATION REVIEW FEES:

If the application is for a new stationary source facility, please check all that apply. If this application is for a modification to an existing permit please see Section III.

Check All That Apply	Stationary Sources	Review Fee	Program Element
Air Quality Notifications			
	AQN New Application	\$641.00	2801
	AQN Technical Amendment	\$352.00	2802
	AQN Transfer of a Prior Authorization	\$352.00	2803
X	Not Applicable	See Sections Below	
Stationary Source Review Fees (Not Based on Proposed Allowable Emission Rate)			
	Source Registration required by 20.11.40 NMAC	\$ 657.00	2401
	A Stationary Source that requires a permit pursuant to 20.11.41 NMAC or other board regulations and are not subject to the below proposed allowable emission rates	\$1,314.00	2301
X	Not Applicable	See Sections Below	
Stationary Source Review Fees (Based on the Proposed Allowable Emission Rate for the single highest fee pollutant)			
	Proposed Allowable Emission Rate Equal to or greater than 1 tpy and less than 5 tpy	\$986.00	2302
	Proposed Allowable Emission Rate Equal to or greater than 5 tpy and less than 25 tpy	\$1,971.00	2303
	Proposed Allowable Emission Rate Equal to or greater than 25 tpy and less than 50 tpy	\$3,942.00	2304
	Proposed Allowable Emission Rate Equal to or greater than 50 tpy and less than 75 tpy	\$5,913.00	2305
	Proposed Allowable Emission Rate Equal to or greater than 75 tpy and less than 100 tpy	\$7,884.00	2306
	Proposed Allowable Emission Rate Equal to or greater than 100 tpy	\$9,855.00	2307
X	Not Applicable	See Section Above	

Federal Program Review Fees (In addition to the Stationary Source Application Review Fees above)			
	40 CFR 60 - "New Source Performance Standards" (NSPS)	\$1,314.00	2308
	40 CFR 61 - "Emission Standards for Hazardous Air Pollutants (NESHAPs)	\$1,314.00	2309
	40 CFR 63 - (NESHAPs) Promulgated Standards	\$1,314.00	2310
	40 CFR 63 - (NESHAPs) Case-by-Case MACT Review	\$13,140.00	2311
	20.11.61 NMAC, Prevention of Significant Deterioration (PSD) Permit	\$6,570.00	2312
	20.11.60 NMAC, Non-Attainment Area Permit	\$6,570.00	2313
X	<i>Not Applicable</i>	<i>Not Applicable</i>	

III. MODIFICATION TO EXISTING PERMIT APPLICATION REVIEW FEES:

If the permit application is for a modification to an existing permit, please check all that apply. If this application is for a new stationary source facility, please see Section II.

Check All That Apply	Modifications	Review Fee	Program Element
Modification Application Review Fees (Not Based on Proposed Allowable Emission Rate)			
	Proposed modification to an existing stationary source that requires a permit pursuant to 20.11.41 NMAC or other board regulations and are not subject to the below proposed allowable emission rates	\$1,314	2321
X	<i>Not Applicable</i>	<i>See Sections Below</i>	
Modification Application Review Fees (Based on the Proposed Allowable Emission Rate for the single highest fee pollutant)			
	Proposed Allowable Emission Rate Equal to or greater than 1 tpy and less than 5 tpy	\$986.00	2322
X	Proposed Allowable Emission Rate Equal to or greater than 5 tpy and less than 25 tpy	\$1,971.00	2323
	Proposed Allowable Emission Rate Equal to or greater than 25 tpy and less than 50 tpy	\$3,942.00	2324
	Proposed Allowable Emission Rate Equal to or greater than 50 tpy and less than 75 tpy	\$5,913.00	2325
	Proposed Allowable Emission Rate Equal to or greater than 75 tpy and less than 100 tpy	\$7,884.00	2326
	Proposed Allowable Emission Rate Equal to or greater than 100 tpy	\$9,855.00	2327
	<i>Not Applicable</i>	<i>See Section Above</i>	
Major Modifications Review Fees (In addition to the Modification Application Review Fees above)			
	20.11.60 NMAC, Permitting in Non-Attainment Areas	\$6,570	2333
	20.11.61 NMAC, Prevention of Significant Deterioration	\$6,570	2334
X	<i>Not Applicable</i>	<i>Not Applicable</i>	
Federal Program Review Fees (This section applies only if a Federal Program Review is triggered by the proposed modification) (These fees are in addition to the Modification and Major Modification Application Review Fees above)			
	40 CFR 60 - "New Source Performance Standards" (NSPS)	\$1,314.00	2328
	40 CFR 61 - "Emission Standards for Hazardous Air Pollutants (NESHAPs)	\$1,314.00	2329
	40 CFR 63 - (NESHAPs) Promulgated Standards	\$1,314.00	2330
	40 CFR 63 - (NESHAPs) Case-by-Case MACT Review	\$13,140.00	2331
	20.11.61 NMAC, Prevention of Significant Deterioration (PSD) Permit	\$6,570.00	2332
	20.11.60 NMAC, Non-Attainment Area Permit	\$6,570.00	2333
X	<i>Not Applicable</i>	<i>Not Applicable</i>	

IV. ADMINISTRATIVE AND TECHNICAL REVISION APPLICATION REVIEW FEES:

If the permit application is for an administrative or technical revision of an existing permit issued pursuant to 20.11.41 NMAC, please check one that applies.

Check One	Revision Type	Review Fee	Program Element
	Administrative Revisions	\$ 250.00	2340
	Technical Revisions	\$ 500.00	2341
X	Not Applicable	See Sections II, III or V	

V. PORTABLE STATIONARY SOURCE RELOCATION FEES:

If the permit application is for a portable stationary source relocation of an existing permit, please check one that applies.

Check One	Portable Stationary Source Relocation Type	Review Fee	Program Element
	No New Air Dispersion Modeling Required	\$ 500.00	2501
	New Air Dispersion Modeling Required	\$ 750.00	2502
X	Not Applicable	See Sections II, III or V	

VI. Please submit a check or money order in the amount shown for the total application review fee.

Section Totals	Review Fee Amount
Section II Total	\$
Section III Total	\$1,971.00
Section IV Total	\$
Section V Total	\$
Total Application Review Fee	\$

I, the undersigned, a responsible official of the applicant company, certify that to the best of my knowledge, the information stated on this checklist, give a true and complete representation of the permit application review fees which are being submitted. I also understand that an incorrect submittal of permit application reviews may cause an incompleteness determination of the submitted permit application and that the balance of the appropriate permit application review fees shall be paid in full prior to further processing of the application.

Signed this 4 day of April 2023
Jeff Horner Corporate Director, EHS
 Print Name Print Title
[Signature]
 Signature

Definition of Qualified Small Business as defined in 20.11.2 NMAC:

“Qualified small business” means a business that meets all of the following requirements:

- (1) a business that has 100 or fewer employees;
- (2) a small business concern as defined by the federal Small Business Act;
- (3) a source that emits less than 50 tons per year of any individual regulated air pollutant, or less than 75 tons per year of all regulated air pollutants combined; and
- (4) a source that is not a major source or major stationary source.

Note: Beginning January 1, 2011, and every January 1 thereafter, an increase based on the consumer price index shall be added to the application review fees. The application review fees established in Subsection A through D of 20.11.2.18 NMAC shall be adjusted by an amount equal to the increase in the consumer price index for the immediately-preceding year. Application review fee adjustments equal to or greater than fifty cents (\$0.50) shall be rounded up to the next highest whole dollar. Application review fee adjustments totaling less than fifty cents (\$0.50) shall be rounded down to the next lowest whole dollar. The department shall post the application review fees on the city of Albuquerque environmental health department air quality program website.

Public Notice Documentation



Timothy M. Keller.
Mayor

Public Participation

**List of Neighborhood Associations
and Neighborhood Coalitions
MEMORANDUM**

To: Adam Erenstein, Principal Consultant

From: Angela Lopez, Environmental Health Department/Air Quality Permitting Supervisor

Subject: Determination of Neighborhood Associations and Coalitions within 0.5 mile of 9401 San Mateo Blvd. NE in Bernalillo County, NM.

Date: February 6, 2023

DETERMINATION:

On February 6, 2023, I used the City of Albuquerque Zoning Advanced Map Viewer (<http://coagiswcb.cabq.gov/>) to verify which City of Albuquerque Neighborhood Associations (NA), Homeowner Associations (HOA) and Neighborhood Coalitions (NC) are located within 0.5 mile of 9401 San Mateo Blvd. NE in Bernalillo County, NM.

I then used the City of Albuquerque Office (COA) of Neighborhood Coordination's Monthly Master NA List dated February 2023 and the Bernalillo County (BC) Monthly Neighborhood Association February 2023 Excel file to determine the contact information for each NA and NC located within 0.5 mile of 9401 San Mateo Blvd. NE in Bernalillo County, NM.

The table below contains the contact information, which will be used in the City of Albuquerque Environmental Health Department's public notice. Duplicates have been deleted.

COA/BC Association or Coalition	Name	Email or Mailing Address*
Alameda North Valley Association	Steve Wentworth	anvanews@aol.com
District 4 Coalition of Neighborhood Association	Ellen Dueweke Mildred Griffiee	edueweke@juno.com mgriffiee@noreste.org
Nor Este Neighborhood Association	Gina Pioquinto Uri Bassan	rpmartinez003@gmail.com uri.bassan@noreste.org
North Edith Commercial Corridor Association	Michael Haederle Evelyn Harris Christine Benavidez	haederle@yahoo.com grumpyeh46@comcast.net christine61benavidez@gmail.com
North Valley Coalition	Peggy Norton Doyle Kimbrough Coalition Email	peggynorton@yahoo.com newmexmba@aol.com nvcabq@gmail.com

West La Cueva NA	Peggy Neff Erica Vasquez	peggyd333@yahoo.com ericamvas@gmail.com
Wildflower Area Neighborhood Association	Erin O'Neil Joe Gober	ejoneil40@gmail.com gober621@comcast.net

****If email address is not listed, provide public notice via certified mail and include a copy of each mail receipt with the application submittal.***

NOTICE FROM THE APPLICANT

Notice of Intent to Apply for Air Quality Construction Permit

You are receiving this notice because the New Mexico Air Quality Control Act (20.11.41.13B NMAC) requires any owner/operator proposing to construct or modify a facility subject to air quality regulations to provide public notice by certified mail or electronic mail to designated representatives of recognized neighborhood associations and coalitions within 0.5-mile of the property on which the source is or is proposed to be located.

This notice indicates that the owner/operator intends to apply for an Air Quality Construction Permit from the Albuquerque – Bernalillo County Joint Air Quality Program. Currently, no application for this proposed project has been submitted to the Air Quality Program. Applicants are required to include a copy of this form and documentation of mailed notices with their Air Quality Construction Permit Application.

Proposed Project Information

Applicant's name and address:

Nombre y domicilio del solicitante:

SUMCO Phoenix Corporation, 9401 San Mateo Blvd. NE., Albuquerque, NM 87113

Owner / operator's name and address:

Nombre y domicilio del propietario u operador:

SUMCO Phoenix Corporation, 9401 San Mateo Blvd. NE., Albuquerque, NM 87113

Contact for comments and inquires:

Datos actuales para comentarios y preguntas:

Name (*Nombre*): Jeff Homer, Rafael Velazquez

Address (*Domicilio*): 9401 San Mateo Blvd. NE, Albuquerque, NM 87113

Phone Number (*Número Telefónico*): 480-473-6503, 480-473-6563

E-mail Address (*Correo Electrónico*): Jeff.homer@sumcousa.com, Rafael.velazquez@sumcousa.com

Actual or estimated date the application will be submitted to the department:

Fecha actual o estimada en que se entregará la solicitud al departamento: 03/17/2023

Description of the source:

Descripción de la fuente:

Natural gas combustion emissions from boilers and humidifiers, diesel emergency generator, particulate emissions from cooling towers, chemical emissions from process clean and dopants.

Exact location of the source or proposed source:

Ubicación exacta de la fuente o fuente propuesta:

SUMCO Phoenix Corporation, 9401 San Mateo Blvd. NE., Albuquerque, NM 87113

Nature of business:

Tipo de negocio:

Expitaxial wafer manufacturing

Process or change for which the permit is requested:

Proceso o cambio para el cuál de solicita el permiso:

Update the permit to include an accurate representation of the number of Chemical Vapor Deposition Units (CVDUs). Previously, CVDU's 12 and 13 were included in the permit but did not have any emissions. Emissions 12 and 13 have been removed with no change in emissions. ; Updating the permit to include an accurate representation of chemical usage for Hydrofluoric Acid, Arsine and Phosphine; updating permit Condition 2.G of the current permit for unit FS3 (exhaust scrubber) for water flow rates, spray head pressure and removal of pH limit which is not applicable to unit FS3; and updating humidifier usage on site.

Maximum operating schedule:

Horario máximo de operaciones:

24 hours per day, 7 days per week, 52 weeks per year.

Normal operating schedule:

Horario normal de operaciones:

24 hours per day, 7 days per week, 52 weeks per year.

Preliminary estimate of the maximum quantities of each regulated air contaminant the source will emit:
Estimación preliminar de las cantidades máximas de cada contaminante de aire regulado que la fuente va a emitir:

Air Contaminant <i>Contaminante de aire</i>	Proposed Construction Permit <i>Permiso de Construcción Propuesto</i>		Net Changes (for permit modification or technical revision) <i>Cambio Neto de Emisiones (para modificación de permiso o revisión técnica)</i>	
	pounds per hour <i>libras por hora</i>	tons per year <i>toneladas por año</i>	pounds per hour <i>libras por hora</i>	tons per year <i>toneladas por año</i>
CO	6.89	5.08	+0.07	+0.29
NOx	20.87	9.21	+0.08	+0.34
VOC	1.64	0.63	+0.0004	+0.02
SO2	1.32	0.35	+0.00045	+0.002
PM10	1.68	1.54	+0.01	+0.03
PM2.5	1.49	0.68	+0.01	+0.03
HAP	0.34	1.49	+0.06	+0.27

Questions or comments regarding this Notice of Intent should be directed to the Applicant. Contact information is provided with the Proposed Project Information on the first page of this notice. To check the status of an Air Quality Construction Permit application, call 311 and provide the Applicant's information, or visit www.cabq.gov/airquality/air-quality-permits.

The Air Quality Program will issue a Public Notice announcing a 30-day public comment period on the permit application for the proposed project when the application is deemed complete. The Air Quality Program does not process or issue notices on applications that are deemed incomplete. More information about the air quality permitting process is attached to this notice.

Air Quality Construction Permitting Overview

This is the typical process to obtain an Air Quality Construction Permit for Synthetic Minor and Minor sources of air pollution from the Albuquerque – Bernalillo County Joint Air Quality Program.

Step 1: Pre-application Meeting: The Applicant and their consultant must request a meeting with the Air Quality Program to discuss the proposed action. If air dispersion modeling is required, Air Quality Program staff discuss the modeling protocol with the Applicant to ensure that all proposed emissions are considered.

Notice of Intent from the Applicant: Before submitting their application, the Applicant is required to notify all nearby neighborhood associations and interested parties that they intend to apply for an air quality permit or modify an existing permit. The Applicant is also required to post a notice sign at the facility location.

Step 2: Administrative Completeness Review and Preliminary Technical Review: The Air Quality Program has 30 days from the day the permit is received to review the permit application to be sure that it is administratively complete. This means that all application forms must be signed and filled out properly, and that all relevant technical information needed to evaluate any proposed impacts is included. If the application is not complete, the permit reviewer will return the application and request more information from the Applicant. Applicants have three opportunities to submit an administratively complete application with all relevant technical information.

Public Notice from the Department: When the application is deemed complete, the Department will issue a Public Notice announcing a 30-day public comment period on the permit application. This notice is distributed to the same nearby neighborhood associations and interested parties that the Applicant sent notices to, and published on the Air Quality Program's website.

During this 30-day comment period, individuals have the opportunity to submit written comments expressing their concerns or support for the proposed project, and/or to request a Public Information Hearing. If approved by the Environmental Health Department Director, Public Information Hearings are held after the technical analysis is complete and the permit has been drafted.

Step 3: Technical Analysis and Draft Permit: Air Quality Program staff review all elements of the proposed operation related to air quality, and review outputs from advanced air dispersion modeling software that considers existing emission levels in the area surrounding the proposed project, emission levels from the proposed project, and meteorological data. The total calculated level of emissions is compared to state and federal air quality standards and informs the decision on whether to approve or deny the Applicant's permit.

Draft Permit: The permit will establish emission limits, standards, monitoring, recordkeeping, and reporting requirements. The draft permit undergoes an internal peer review process to determine if the emissions were properly evaluated, permit limits are appropriate and enforceable, and the permit is clear, concise, and consistent.

Public Notice from the Department: When the technical analysis is complete and the permit has been drafted, the Department will issue a second Public Notice announcing a 30-day public comment period on the technical analysis and draft permit. This second Public Notice, along with the technical analysis documentation and draft permit, will be published on the Air Quality Program's website, and the public notice for availability of the technical analysis and draft permit will only be directly sent to those who requested further information during the first comment period.

Air Quality Construction Permitting Overview

During this second 30-day comment period, residents have another opportunity to submit written comments expressing their concerns or support for the proposed project, and/or to request a Public Information Hearing.

Possible Public Information Hearing: The Environmental Health Department Director may decide to hold a Public Information Hearing for a permit application if there is significant public interest and a significant air quality issue. If a Public Information Hearing is held, it will occur after the technical analysis is complete and the permit has been drafted.

Step 4: Public Comment Evaluation and Response: The Air Quality Program evaluates all public comments received during the two 30-day public comment periods and Public Information Hearing, if held, and updates the technical analysis and draft permit as appropriate. The Air Quality Program prepares a response document to address the public comments received, and when a final decision is made on the permit application, the comment response document is published on the Air Quality Program's website and distributed to the individuals who participated in the permit process. If no comments are received, a response document is not prepared.

Step 5: Final Decision on the Application: After public comments are addressed and the final technical review is completed, the Environmental Health Department makes a final decision on the application. If the permit application meets all applicable requirements set forth by the New Mexico Air Quality Control Act and the federal Clean Air Act, the permit is approved. If the permit application does not meet all applicable requirements, it is denied.

Notifications of the final decision on the permit application and the availability of the comment response document is published on the Air Quality Program's website and distributed to the individuals who participated in the permit process.

The Department must approve a permit application if the proposed action will meet all applicable requirements and if it demonstrates that it will not result in an exceedance of ambient air quality standards. Permit writers are very careful to ensure that estimated emissions have been appropriately identified or quantified and that the emission data used are acceptable.

The Department must deny a permit application if it is deemed incomplete three times, if the proposed action will not meet applicable requirements, if estimated emissions have not been appropriately identified or quantified, or if the emission data are not acceptable for technical reasons.

For more information about air quality permitting, visit www.cabq.gov/airquality/air-quality-permits



Proposed Air Quality Construction Permit
 Sumco Air Construction Air Quality Construction Permit

SUMCO Phoenix Corporation
 SUMCO Phoenix Corporation
 March 11, 2025

1. Applicant Name: SUMCO Phoenix Corporation
 2. Project Name: SUMCO Phoenix Corporation
 3. Project Location: 4701 San Mateo Blvd NE, Albuquerque, NM 87110
 4. Project Description: Major on-site construction for building main chemical hospital water manufacturing facility, including construction and testing of existing and new process water treatment tanks, and testing of existing and new process water treatment tanks, and testing of existing and new process water treatment tanks.

Parameter	Construction Emissions	Background	Permit	Standard
PM ₁₀	40.89	3.21	+0.07	+0.54
PM _{2.5}	4.13	0.05	+0.04	+0.25
SO ₂	1.52	0.03	+0.04	+0.004
NO _x	1.41	0.32	+0.0001	+0.004
CO	1.89	1.26	+0.0001	+0.004
O ₃	0.34	0.48	+0.01	+0.004
NO ₂	0.34	1.19	+0.01	+0.004
SO ₂	0.34	1.19	+0.01	+0.004

in hours per day, 1 day per week, 56 weeks per year
 in hours per day, 1 day per week, 56 weeks per year

Bill Wamer - District Manager
 1100 1st Avenue, NE, Albuquerque, NM 87105
 505-763-1000 - 505-763-1005
 811 Number @sumco.com, 811 Number @sumco.com




Proposed Air Quality Construction Permit
 Oficina de Distribución de Calidad del Aire y Medio Ambiente

SUMCO Phoenix Corporation
 SUMCO Phoenix Corporation
 March 17, 2023

1. Location of Project: 4401 San Mateo Blvd NE, Albuquerque, NM 87110
 2. Nature of Project: Construction of a new 100,000 sq ft facility for the production of capital equipment, including manufacturing and assembly of various types of capital equipment.

Parameter	Background	Project	Standard	Notes
PM ₁₀	40.83	0.41	+0.08	+0.34
PM _{2.5}	1.91	0.08	+0.07	+0.24
SO ₂	1.32	0.02	+0.0004	+0.02
NO _x	1.93	0.37	+0.0004	+0.002
CO	1.49	0.46	+0.01	+0.05
Ozone	0.34	1.49	+0.01	+0.02

All hours per day, 7 days per week, 54 weeks per year
 All hours per day, 7 days per week, 54 weeks per year

4401 San Mateo Blvd NE, Albuquerque, NM 87110
 505-762-1500, 505-762-1505
 4401 San Mateo Blvd NE, Albuquerque, NM 87110

From: [Adam Erenstein](#)
To: anvanews@aol.com; edueweke@juno.com; mgriffie@noeste.org; rpmartinez003@gmail.com; uri.bassan@noeste.org; haederle@yahoo.com; grumpyeh46@comcast.net; christine61benavidez@gmail.com; Peggy.Norton@newmexmba@aol.com; nvcabq@gmail.com; peggyd333@yahoo.com; ericamvas@gmail.com; ejoneil40@gmail.com; gober621@comcast.net
Cc: [Velazquez, Rafael](#); [Homer, Jeff](#)
Subject: Public Notice of Proposed Air Quality Construction Permit Application: SUMCO Phoenix Corporation
Date: Tuesday, April 4, 2023 5:01:49 PM
Attachments: [image001.png](#)
[NOI_SUMCO_2023-0311.pdf](#)

Dear Neighborhood Association/Coalition Representative(s),

Why did I receive this public notice?

You are receiving this notice in accordance with New Mexico Administrative Code (NMAC) 20.11.41.13.B(1) which requires any applicant seeking an Air Quality Construction Permit pursuant to 20.11.41 NMAC to provide public notice by certified mail or electronic mail to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located.

What is the Air Quality Permit application review process?

The City of Albuquerque, Environmental Health Department, Air Quality Program (Program) is responsible for the review and issuance of Air Quality Permits for any stationary source of air contaminants within Bernalillo County. Once the application is received, the Program reviews each application and rules it either complete or incomplete. Complete applications will then go through a 30-day public comment period. Within 90 days after the Program has ruled the application complete, the Program shall issue the permit, issue the permit subject to conditions, or deny the requested permit or permit modification. The Program shall hold a Public Information Hearing pursuant to 20.11.41.15 NMAC if the Director determines there is significant public interest, and a significant air quality issue is involved.

What do I need to know about this proposed application?

Applicant Name	SUMCO Phoenix Corporation
Site or Facility Name	SUMCO Phoenix Corporation
Site or Facility Address	9401 San Mateo Blvd. NE., Albuquerque, NM 87113
New or Existing Source	Existing Source
Anticipated Date of Application Submittal	April 5, 2023
Summary of Proposed Source to Be Permitted	Update the permit to include an accurate representation of the number of Chemical Vapor Deposition Units (CVDUs). Previously, CVDU's 12 and 13 were included in the permit but did not have any emissions. Emissions 12 and 13 have been removed with no change in emissions. ; Updating the permit to include an accurate representation of chemical usage for Hydrofluoric Acid, Arsine and Phosphine; updating permit Condition 2.G of the current permit for unit FS3 (exhaust scrubber) for water flow rates, spray head pressure and removal of pH limit which is not applicable to unit FS3; and updating humidifier usage on site.

What emission limits and operating schedule are being requested?

See attached Notice of Intent to Construct form for this information.

How do I get additional information regarding this proposed application?

For inquiries regarding the proposed source, contact:

- Jeff Homer or Rafael Velazquez
- Jeff.homer@sumcousa.com , Rafael.velazquez@sumcousa.com
480-473-6503, 480-473-6563

For inquiries regarding the air quality permitting process, contact:

- City of Albuquerque Environmental Health Department Air Quality Program
- aqd@cabq.gov
- (505) 768-1972

Regards,

Adam Erenstein

Principal Consultant, Manager of Consulting Services

P 505.266.6611 M 480.760.3860

NEW ADDRESS: 9400 Holly Avenue NE, Building 3, Suite B, Albuquerque, NM 87122

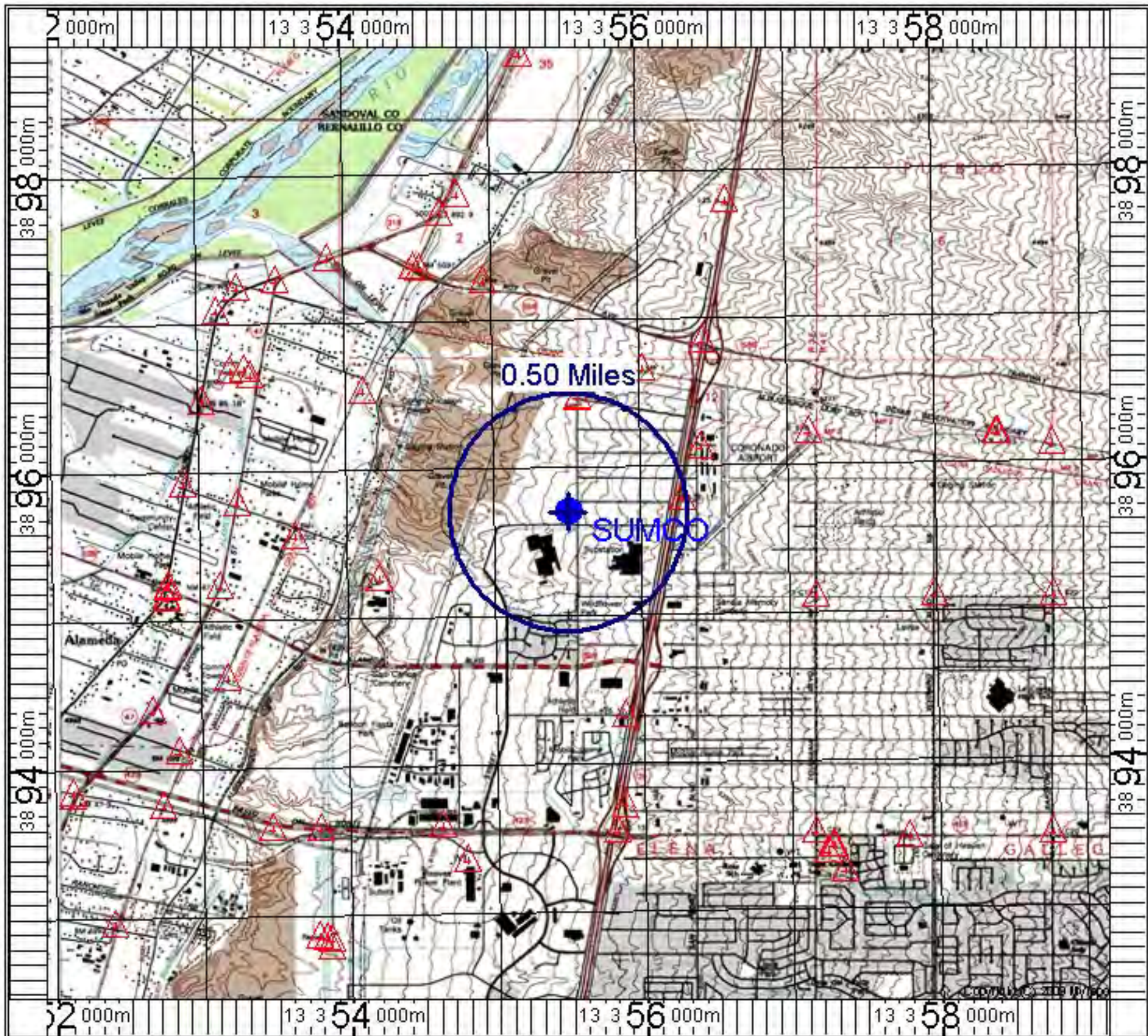
Email: aerenstein@trinityconsultants.com



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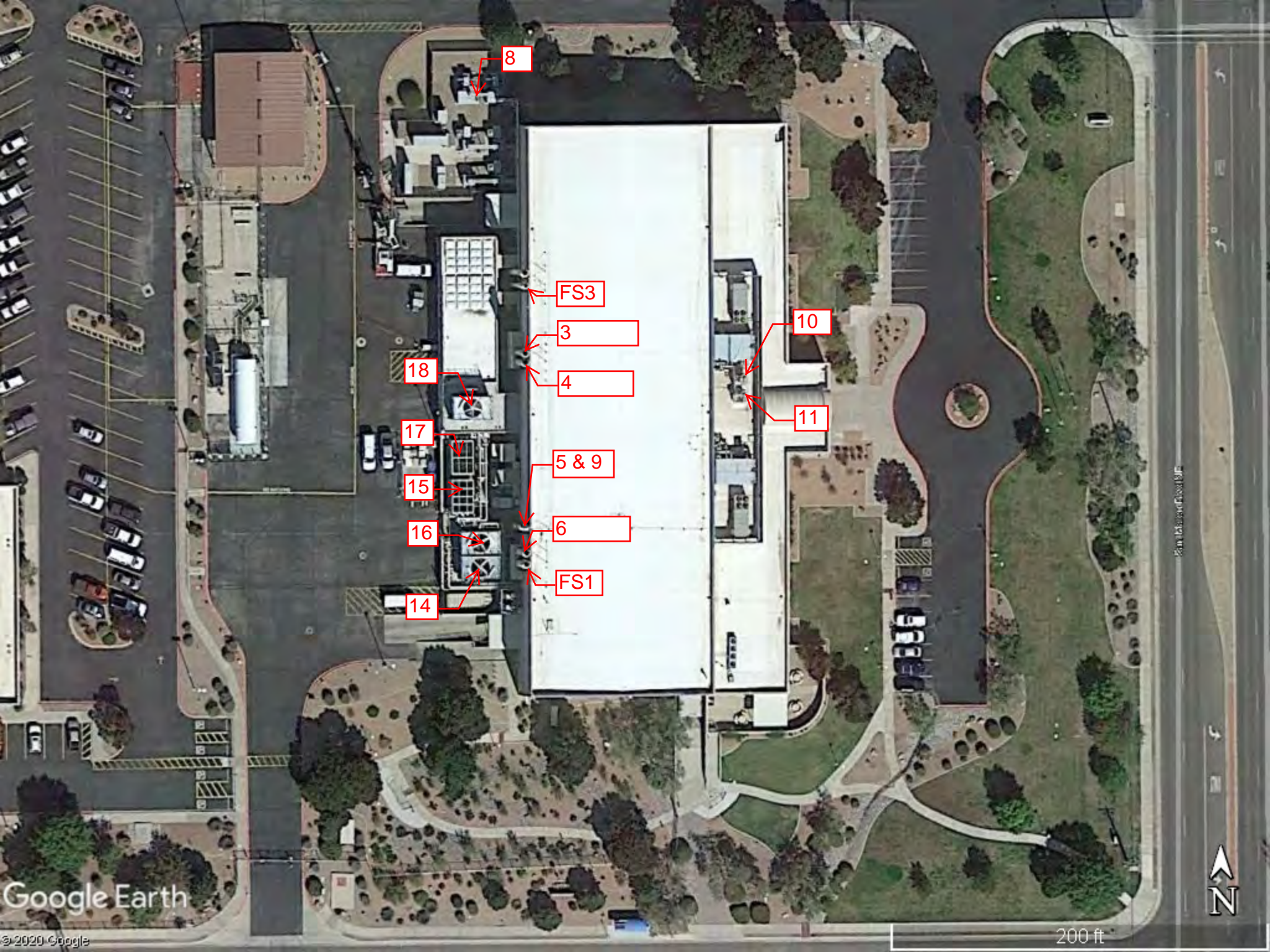
Facility Map and Source Locations



Map Name: ALAMEDA
 Print Date: 01/26/21

Scale: 1 inch = 3,333 ft.
 Map Center: 13 0355564 E 3895628 N

Horizontal Datum: WGS84



8

FS3

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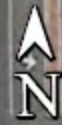
15

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16

FS1

14



San Antonio River

Air Emissions Calculations

Emergency Diesel Generator

Unit No. : 8
 Make/Manufacturer: Cummins NTA8550G3
 Capacity: 535 hp
 399 kW
 Hours of Operation: 500 hr/yr

	NO _x	CO	VOC	SO ₂	PM	Units	Notes
<i>Emission Factors</i>	0.031	6.68E-03	2.47E-03	2.05E-03	2.20E-03	lb/hp-hr	AP-42 Table 3.3-2
<i>Emissions</i>	16.59	3.57	1.32	1.10	1.18	lb/hr	EF [lb/hp-hr] * Capacity [hp]
	4.15	0.89	0.33	0.27	0.29	tpy	Hourly Emissions [lb/hr] * Hours of Operation [hr/yr]
<i>Safety Factors</i>	20%	70%	20%	20%	20%	%	Conservative Assumptions
<i>Emissions w/ Safety Factor</i>	19.9	6.1	1.6	1.3	1.4	lb/hr	
	5.0	1.5	0.4	0.3	0.4	tpy	

Boilers

Input Information			
Unit(s):	5 & 9		
Description:	8.27 MMBtu/hr boilers		
Heat input:	8.27	MMBtu/hr	Estimated heat input
Fuel heat value:	1,020	Btu/scf	Estimated heating value
Fuel sulfur content:	0.2	gr/100scf	Estimated for sweet field gas
Operating hours:	8760	hours/year	
Fuel Usage:	8107.8	scf/hr	

Emission Calculations per Unit							
	NO _x	CO	VOC	SO ₂ ¹	PM ²	Unit	Notes
Emission Factors	100	84	5.5		7.6	lb/MMscf	AP-42 Table 1.4-1 & 2
	100.0	84.0	5.5		7.6	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
Total Emissions	0.81	0.68	0.045	0.0046	0.062	lb/hr ³	
	3.55	2.98	0.20	0.020	0.27	tons/year ⁴	

¹ SO₂ lb/hr = Sulfur (gr/100scf) * 1lb/7000gr * Rating (MMBtu/hr)*10⁶ (Btu/MMBtu) / Heat value (Btu/scf) * 64/32

² Assumes TSP = PM₁₀ = PM_{2.5}

³ lb/hr emissions calculated using the following methods:

NO_x, CO, VOC and PM lb/hr = EF (lb/MMscf) * Rating (MMBtu/hr) / Heat value (Btu/scf)

⁴ Tons/year = lb/hr * Operating hours * 1 ton/2000lb

Parameters	Value	Unit	Note
Input heat rate	8.27	MMBtu/hr	Estimated
Fuel heat value	1,020	Btu/scf	Estimated, nominal
Fuel rate	8.11	Mscf/hr	Input heat rate / fuel heat value
Annual fuel usage	71.02	MMscf/yr	8760 actual hrs/yr operation

Parameters	Value	Unit	Note
Input heat rate	8.27	MMBtu/hr	
Exhaust temp	600	°F	Engineering Estimate
Stack height	55.35	ft	Engineering Estimate
Stack diameter	2.00	ft	Engineering Estimate
Exhaust flow (Actual)	6207	acfm	Flow (acfm) = Flow (dscfm) * (Stack Temp + 460) / 528 * 29.92 / Site Bar. Pres. / (100% - Moisture%)
	103.45	acfs	Flow (acfs) - Flow (acfm) / 60s/min
Exhaust velocity	32.93	ft/sec	Exhaust flow / stack area
F factor	8,710	dscf/MMBtu	40 CFR 60, Appendix A-7, Table 19-2
Moisture	10	%	Nominal
Exhaust flow (Dry)	2301.9	dscfm	Flow (dscfm) = heat input * O ₂ F * [20.9 / (20.9 - O ₂ %)]
O ₂ %	10	%	
Site Elevation	5,151	ft MSL	
Pressure at Elevation	24.75	in Hg	

Humidifiers

Input Information			
Unit(s):	10 & 11		
Description:	800 Mbtu/hr humidifiers		
Heat input:	0.8	MMBtu/hr	Estimated heat input
Fuel heat value:	1,020	Btu/scf	Estimated heating value
Fuel sulfur content:	0.2	gr/100scf	Estimated for sweet field gas
Operating hours:	8760	hours/year	
Fuel Usage:	784.3	scf/hr	

Emission Calculations per Unit							
	NO _x	CO	VOC	SO ₂ ¹	PM ²	Unit	Notes
Emission Factors	100	84	5.5		7.6	lb/MMscf	AP-42 Table 1.4-1 & 2
	100.0	84.0	5.5		7.6	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
Total Emissions	0.078	0.066	0.0043	4.48E-04	0.0060	lb/hr ³	
	0.34	0.29	0.019	0.0020	0.026	tons/year ⁴	

¹ SO₂ lb/hr = Sulfur (gr/100scf) * 1lb/7000gr * Rating (MMBtu/hr) * 10⁶ (Btu/MMBtu) / Heat value (Btu/scf) * 64/32

² Assumes TSP = PM₁₀ = PM_{2.5}

³ lb/hr emissions calculated using the following methods:

NO_x, CO, VOC and PM lb/hr = EF (lb/MMscf) * Rating (MMBtu/hr) / Heat value (Btu/scf)

⁴ Tons/year = lb/hr * Operating hours * 1 ton/2000lb

Parameters	Value	Unit	Note
Input heat rate	0.80	MMBtu/hr	Estimated
Fuel heat value	1,020	Btu/scf	Estimated, nominal
Fuel rate	0.78	Mscf/hr	Input heat rate / fuel heat value
Annual fuel usage	6.87	MMscf/yr	8760 actual hrs/yr operation

Parameters	Value	Unit	Note
Input heat rate	0.80	MMBtu/hr	
Exhaust temp	300	°F	Engineering Estimate
Stack height	29.66	ft	Engineering Estimate
Stack diameter	0.33	ft	Engineering Estimate
Exhaust flow (Actual)	431	acfm	Flow (acfm) = Flow (scfm) * (Stack Temp + 460) / 528 * 29.92 / Site Bar. Pres. / (100% - Moisture%)
	7.18	acfs	Flow (acfs) = Flow (acfm) / 60s/min
Exhaust velocity	83.89	ft/sec	Exhaust flow / stack area
O ₂ F factor	8,710	dscf/MMBtu	Method 9
Moisture	10	%	Nominal
Exhaust flow (Dry)	222.7	dscfm	Flow (dscfm) = heat input * O ₂ F * [20.9 / (20.9 - O ₂ %)]
O ₂ %	10	%	
Site Elevation	5,151	ft MSL	
Pressure at Elevation	24.75	in Hg	

Chemical Usage

Chemical Usage Emission Summary

Unit No.	Description	Total HAP		Hydrofluoric Acid ¹		Anhydrous Hydrogen Chloride ²		Phosphine ³		Arsine ³	
		pph	tpy	pph	tpy	pph	tpy	pph	tpy	pph	tpy
1	Process Clean	0.020	0.086	0.020	0.086	-	-	-	-	-	-
2	Process Clean Dopant	2.14E-04	9.38E-04	-	-	-	-	7.13E-05	3.13E-04	1.43E-04	6.25E-04
3, 4, 6	Chemical Vapor Deposition Unit (CVDU)	0.32	1.41	-	-	0.32	1.41	7.13E-05	3.13E-04	1.43E-04	6.25E-04
Total	Total	0.34	1.49	0.020	0.086	0.32	1.41	1.43E-04	6.25E-04	2.85E-04	1.25E-03

¹ Hydrofluoric is only used in the cleaning processes.

² Anhydrous Hydrogen Chloride is only used in the processed represented under CVDUs.

Dopants (Phosphine, and Arsine) are used in the Process Clean Dopant and CVDUs. The usage of these chemicals is partitioned such that 50% of the emissions are associated with

³ Process Clean Dopant and 50% of the emissions are associated with CVDUs.

Chemical Usage

Hydrofluoric Acid	
CAS No.	7664-39-3
Usage	3,000 gal/yr
Concentration	49% by volume
Volume	1470 gal/yr
Density	9.56 lb/gal
Annual Weight	7.0 tpy
Control Efficiency	99%
Safety Factor	22%
Controlled Weight	0.020 lb/hr
Controlled Weight	0.086 tpy

Phosphine	
CAS No.	7803-51-2
Usage	100 lbs./yr
Concentration ¹	100%
Annual Weight	5.00E-02 tpy
Control Efficiency	99%
Safety Factor	25%
Controlled Weight	1.43E-04 lb/hr
Controlled Weight	6.25E-04 tpy

¹ Concentrations may vary but phosphine will not exceed the requested usage or associated emission rate.

Anhydrous Hydrogen Chloride	
CAS No.	7647-01-0
Annual Weight	225,000 lb/yr
Annual Weight	113 tpy
Control Efficiency	99%
Safety Factor	25%
Controlled Weight	0.32 lb/hr
Controlled Weight	1.41 tpy

Arsine	
CAS No.	7784-42-1
Usage	200 lbs./yr
Concentration ¹	100%
Annual Weight	1.00E-01 tpy
Control Efficiency	99%
Safety Factor	25%
Controlled Weight	2.85E-04 lb/hr
Controlled Weight	1.25E-03 tpy

¹ Concentrations may vary but phosphine will not exceed the requested usage or associated emission rate.

Supporting Information

Cummins NTA855-Q3 Exhaust Parameters (Unit 8)

AP-42 Section 3.3 (Unit 8)

AP-42 Section 1.4 (Units 5, 9, 10, and 11)

Unilux Boiler Specification Data (Units 5 and 9)

PURE Humidifier Data (Units 10 and 11)

NMED Technical Memorandum – “Calculating TSP, PM-10 and PM-2.5 from Cooling Towers” (Units 14 to 18)

ABCWUA TDS Limits Documentation (Units 14 to 18)

Scrubber Control Efficiency (Units 3, 4, and 6)

Scrubber Parameters (FS1, FS2, and FS3)

ENGINE

Model: Cummins NTA855-G3	Bore: 5.5 in. (140 mm)
Type: 4 Cycle, In-line 6 Cylinder Diesel	Stroke 6 in. (152 mm)
Aspiration: Turbocharged and Aftercooled	Displacement: 855 cu. in. (14.0 liters)
Compression Ratio: 14:1	
Emission Control Device: Turbocharger and Aftercooler, with Variable Timing	

<u>PERFORMANCE DATA</u>	<u>STANDBY</u>	<u>PRIME</u>
BHP @ 1800 RPM (60 Hz)	535	480
Fuel Consumption (gal/Hr)	25.3	22.9
Exhaust Gas Flow (CFM)	3190	2785
Exhaust Gas Temperature (°F)	980	970

Table 3.3-1. EMISSION FACTORS FOR UNCONTROLLED GASOLINE AND DIESEL INDUSTRIAL ENGINES^a

Pollutant	Gasoline Fuel (SCC 2-02-003-01, 2-03-003-01)		Diesel Fuel (SCC 2-02-001-02, 2-03-001-01)		EMISSION FACTOR RATING
	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	
NO _x	0.011	1.63	0.031	4.41	D
CO	6.96 E-03 ^d	0.99 ^d	6.68 E-03	0.95	D
SO _x	5.91 E-04	0.084	2.05 E-03	0.29	D
PM-10 ^b	7.21 E-04	0.10	2.20 E-03	0.31	D
CO ₂ ^c	1.08	154	1.15	164	B
Aldehydes	4.85 E-04	0.07	4.63 E-04	0.07	D
TOC					
Exhaust	0.015	2.10	2.47 E-03	0.35	D
Evaporative	6.61 E-04	0.09	0.00	0.00	E
Crankcase	4.85 E-03	0.69	4.41 E-05	0.01	E
Refueling	1.08 E-03	0.15	0.00	0.00	E

^a References 2,5-6,9-14. When necessary, an average brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr was used to convert from lb/MMBtu to lb/hp-hr. To convert from lb/hp-hr to kg/kw-hr, multiply by 0.608. To convert from lb/MMBtu to ng/J, multiply by 430. SCC = Source Classification Code. TOC = total organic compounds.

^b PM-10 = particulate matter less than or equal to 10 μm aerodynamic diameter. All particulate is assumed to be # 1 μm in size.

^c Assumes 99% conversion of carbon in fuel to CO₂ with 87 weight % carbon in diesel, 86 weight % carbon in gasoline, average BSFC of 7,000 Btu/hp-hr, diesel heating value of 19,300 Btu/lb, and gasoline heating value of 20,300 Btu/lb.

^d Instead of 0.439 lb/hp-hr (power output) and 62.7 lb/mmBtu (fuel input), the correct emissions factors values are 6.96 E-03 lb/hp-hr (power output) and 0.99 lb/mmBtu (fuel input), respectively. This is an editorial correction. March 24, 2009

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO)
FROM NATURAL GAS COMBUSTION^a

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO _x ^b		CO	
	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS) ^c	280	A	84	B
Uncontrolled (Post-NSPS) ^c	190	A	84	B
Controlled - Low NO _x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO _x burners	50	D	84	B
Controlled - Low NO _x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

^a Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from lb/10⁶ scf to kg/10⁶ m³, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from lb/10⁶ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

^b Expressed as NO₂. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_x emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_x emission factor.

^c NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION^a

Pollutant	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
CO ₂ ^b	120,000	A
Lead	0.0005	D
N ₂ O (Uncontrolled)	2.2	E
N ₂ O (Controlled-low-NO _x burner)	0.64	E
PM (Total) ^c	7.6	D
PM (Condensable) ^c	5.7	D
PM (Filterable) ^c	1.9	B
SO ₂ ^d	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

^a Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from lb/10⁶ scf to kg/10⁶ m³, multiply by 16. To convert from lb/10⁶ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

^b Based on approximately 100% conversion of fuel carbon to CO₂. CO₂[lb/10⁶ scf] = (3.67) (CON) (C)(D), where CON = fractional conversion of fuel carbon to CO₂, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2x10⁴ lb/10⁶ scf.

^c All PM (total, condensable, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM₁₀, PM_{2.5} or PM₁ emissions. Total PM is the sum of the filterable PM and condensable PM. Condensable PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

^d Based on 100% conversion of fuel sulfur to SO₂.

Assumes sulfur content is natural gas of 2,000 grains/10⁶ scf. The SO₂ emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO₂ emission factor by the ratio of the site-specific sulfur content (grains/10⁶ scf) to 2,000 grains/10⁶ scf.

Specification Data

UNILUX

MULTIPASS FLEXIBLE WATERTUBE BOILERS
HOT WATER BOILERS



**Unilux Advanced
Manufacturing, LLC**
30 Commerce Park Drive
Niskayuna, NY 12309
518.344.7490

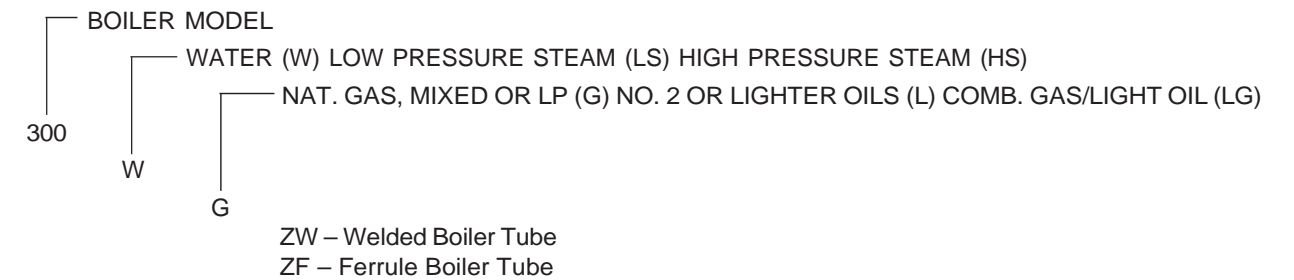
Fax: (518) 344-7495
E-mail: info@uniluxam.com
Web Site: www.uniluxam.com

"From commercial comfort to industrial process"

UNILUX HOT WATER BOILER CAPACITIES:

BOILER MODEL W	MAXIMUM FUEL INPUT BTU/HR IN THOUSANDS
100	1250
150	1750
200	2200
250	2750
300	3000
350	3750
400	4300
500	5400
600	6250
700	7235
800	8270
900	9300
1000	10330
1200	12400
1400	14470
1600	16530
1800	18600
2000	20670
2500	25000
2900	29000
3000	34000
3500	38000

ORDER NUMBER PROCEDURE: Example – ZF 300WG

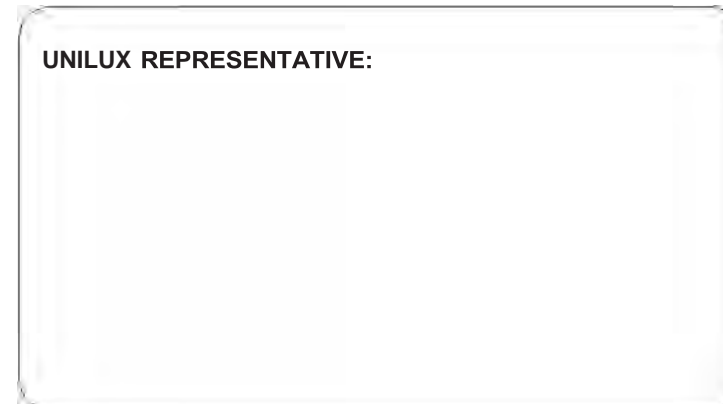


SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. DIMENSIONS MUST BE CONFIRMED FOR CONSTRUCTION.

STANDARD EQUIPMENT:

- PRESSURE GAUGE • THERMOMETER
- LWCO • RELIEF VALVES • BURNER OPERATING AND SAFETY TEMPERATURE CONTROLS

UNILUX REPRESENTATIVE:



ALL BURNER EQUIPMENT UL, CSA APPROVED





Sheet No.
GXDDR-1

Deionized, Demineralized, or Reverse Osmosis

"GXDDR" Series

Gas Fired Humidifier

Looking for an alternative to electrically generated steam humidification? Concerned about using chemically treated boiler steam for direct humidification? If so, PURE's "GXDDR" Series (patent no. 6,705,535) Gas Fired Humidifiers are exactly what you're looking for.

Indoor air quality issues concerning the use of boiler steam for direct humidification have resulted in a growing apprehension for the use of "steam injection" type humidifiers. The possible carry-over of chemical additives and odor created within some boiler systems are being addressed in an effort to improve the indoor air quality for new and existing buildings. The alternative, electric humidifiers, can be prohibitive due to the higher energy costs associated with electrically generated steam, versus the typically lower energy cost of natural gas. For these reasons, PURE has developed the "GXDDR" Series Gas Fired Humidifier.

The "GXDDR" Series Humidifiers utilize a stainless steel heat exchanger, which allows for a gas power burner to be used as the energy source for producing steam from pure water.

The steam produced by the "GXDDR" Series Humidifier is free from chemical or mineral carry-over, providing pure humidification for today's stringent indoor air quality requirements. PURE's highly efficient heat exchanger produces combustion efficiencies up to 84%, as well as providing simplified maintenance. The unique side entry heat exchanger can be removed without removing the cover and injection tube system, and provides a large clean-out opening which extends the full length of the humidifier. Furthermore, the unique design allows for easy removal of the gas burners.

The "GXDDR" Series humidifier is designed to operate on absolutely pure water, such as deionized, demineralized, or reverse osmosis water. Since water mineral build-up does not occur with

pure water, there is no need for an automatic drain system or cleaning. These units are practically maintenance free.

The water level is maintained with a special float valve (in lieu of the tri-probe electronic water controller which is used on the standard water "GX" Series) and a low water float switch is incorporated to provide a low water interlock with the steam control valve. Both floats are protected from water turbulence by an internal baffle.

PURE's commitment to quality and ease of maintenance is further illustrated by the use of pressure clamps that secure the heat exchanger to the reservoir and eliminate the need for through-the-wall threaded fasteners. Precise modulation of the humidifier output is maintained by a high quality gas burner which modulates the gas flow into the heat exchanger.

Each humidifier is supplied with an INTAC® control system mounted in a NEMA-12 enclosure. The INTAC® microprocessor control system provides constant monitoring of the water level and safety systems, as well as providing a gas valve interlock. This will prevent operation, should any of the safety circuits open.

The "GXDDR" humidifiers come standard with free standing support legs, factory mounted control panel, factory insulation and a DCT-927 drain tempering kit. A flexible hose kit is available for remote mounting of the humidifier from the injection tube. Multiple injection tubes are available for improved dissipation of the steam in large ducts or manufactured air handling systems. Multiple humidifiers can be manifolded together to a single injection tube system to provide increased capacity on large air volume projects.

The versatility of the "GXDDR" Series will allow you to design them into any system simply, efficiently and reliably.

Our results are comforting



Capacities, Electrical & Weights

Sheet No.
GXDDR-2

This humidifier is a forced combustion type that can be used with natural gas or liquid propane. The burner can be easily removed to access the side entry exchanger for cleaning. It is designed to work with low-pressure gas between 5" W.G. to 14" W.G.

Unit Capacities in Pounds per Hour {kg/hr} Weights in lbs. {kg} and Electrical Specification

Model No.	Steam Capacity Lb/Hr (kg/Hr)	No. of Burners	*BTU Input	Exhaust Manifold Vent Size (cm)	Shipping Weight (kg)	Operating Weight(kg)	120 Volt, 60 Hz
							Full Load Amps
GXDDR-3	110 (49.9)	1	150,000	4" (10.2)	201 lbs. (91.2)	420 lbs. (190.5)	5.0
GXDDR-4	300 (136.1)	1	400,000	4" (10.2)	390 lbs. (176.9)	710 lbs. (322.1)	5.0
GXDDR-8	600 (272.2)	2	800,000	6" (15.2)	827 lbs. (375.1)	1391 lbs. (630.9)	10.0
GXDDR-12	900 (408.2)	3	1,200,000	8" (20.3)	1125 lbs.(510.3)	2072 lbs. (939.9)	15.0

† Actual humidifier capacity may vary due to the heat loss from the humidifier reservoir. The ambient air temperature, air velocity and injection tube system will affect the rate of heat loss from the reservoir.

* Altitude adjustment:

100% up to 2000'

Over 2000', 4% de-rate per 1000'

Gas Piping Pressure Drop Data

EQUIVALENT LENGTH OF STRAIGHT PIPE IN FEET									
	20	30	40	20	60	80	100	150	200
CFH GAS WITH .2" PRESSURE DROP									
Pipe Size in Inches									
3/4"	152	120	105	93	84	73	66	54	45
1"	300	250	210	190	180	150	135	110	75
1 1/4"	520	425	360	325	300	260	230	190	165
1 1/2"	800	690	560	500	480	410	370	300	260
2"	1700	1400	1200	1100	1000	850	750	600	540
2 1/2"	3000	2500	2100	1900	1800	1550	1375	1100	950
EQUIVALENT LENGTHS OF STANDARD PIPE IN FEET FOR LISTED FITTINGS									
Fitting Type	3/4	1	1 1/4	1 1/2	2	2 1/2	Nominal		
Std. Tee	2.4	5.5	7.5	9	12	13.5	Pipe Size		
Std. Elbow	4.4	2.7	3.7	4.5	5.5	6.1	in Inches		

Gas Input CFH for GXDDR-Series Humidifiers

Model No.	Max BTU/Hr Input	MaxCFH (Nat. Gas)	MaxCFH (Propane)
GXDDR-3	150,000	150	60
GXDDR-4	400,000	400	160
GXDDR-8	800,000	800	320
GXDDR-12	1,200,000	1200	480



Options "GXDDR" Series

Sheet No.
GXDDR-8

To Humidifier

Freeze Protection. A factory installed temperature sensor shall be mounted onto the humidifier reservoir. The system shall maintain the water temperature above freezing.

Standby Water Temperature Sensing. Consists of a temperature sensor to maintain water temperature at a selected level for fast response upon a call for humidity.

Injection Tubes

Injection tube(s) and Flexible Hose. Each unit shall include one or more 10 ft. (305 cm) sections of 1 ½" (3.8 cm) 1.0. flexible hose and a 1 ½" (3.8 cm) 0.0. stainless steel injection tube long enough to extend across the duct. Steam ports shall direct steam upward into the airflow. The reservoir cover shall have a matching connection so the flexible hose can be connected with two stainless steel hose clamps. A two-piece duct plate shall be provided to seal the duct opening.

Fast-Pac Multiple Tube Assembly. Tube assembly consists of a stainless steel supply/condensate header with a 3/4"-NPT drain connection and horizontal 1 1/2"Ø stainless steel injection tubes.

Insty-Pac Multiple Tube Assembly. Tube assembly consists of a steam supply/seperator header constructed of stainless steel with steam inlet, condensate drain outlet and steam jacketed injection tubes welded to header. Steam jacketed injection tubes constructed of stainless steel with punched steam ports of the proper size and spacing to deliver the maximum specified capacity.

To Control Cabinet

Control Panel Door Lock. Control cabinet shall be provided with a factory installed key lock on the cabinet door.

Controls

VAV Control. The INTAC® software shall accept a modulating high-limit humidity input and space controlling RH input and modulate the heater output to prevent over saturation of the supply air due to changes in the quantity of airflow. A compatible space and duct humidity sensor shall be shipped loose for field installation.

Air Flow Proving Switch. A diaphragm operated air flow proving switch with adjustable range of .05" W.C. to 12.0" W.C. shall be provided for field installation. Switch rating shall be 2.5 amps at 120V.

Duct High-Limit. A high-limit humidistat shall be provided for duct installation. The high-limit shall be field set to prevent over saturation within the supply duct.

Venting

Sealed Combustion Air Kit. Consists of a 5" round stainless steel adaptor that allows outside air to be piped directly to the intake of the burner for combustion.

Outdoor Enclosure. Curb/slab mounted weather proof enclosure. Humidifier is factory installed and shipped in enclosure, ready for field gas, water and electrical connections.

Reference the "Specification Sample" for the humidifier base specification.



INTAC® Specification Sample
"GXDDR" Series

Sheet No.
GXDDR-7

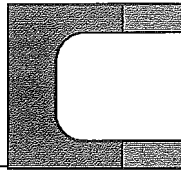
An INTAC® programmable electronic microprocessor humidifier control system shall be mounted and pre-wired to the humidifier control panel door. All humidifier electrical, ground and control terminal connections shall be enclosed in an ETL listed NEMA 12 enclosure. The INTAC® controller shall provide the following standard features:

- Self-diagnostics and system verification on start-up.
- Evaporating reservoir water level verification, control and safety interlock. The controller shall be compatible with all water types.
- Automatic reservoir drain and flush system. The controller shall periodically drain and flush the reservoir based on Accumulated Run Time, Elapsed Time or by an externally triggered dry contact closure (except RO/DI water).
- Cold water tempering prevents excessively hot water from draining during an automatic or seasonal drain cycle.
- Seasonal Drain system shall automatically drain the humidifier reservoir after a selected "NON-USE" period. The controller shall automatically reset the humidifier on a call for humidity (if utilized).
- Safety circuit input terminals including over-temperature shut down.
- Terminal connections to accept virtually all control input signals. Input control range is selected as an "ON-SCREEN" prompt.
- User adjustable controlling and high-limit RH PID functions with adjustable parameters (if utilized).
- Door-mounted display and user interface. Provides two lines of system messaging on a vacuum fluorescent display screen, LED operational indication and keypad parameter entry system.
- Vacuum fluorescent display brightness is adjustable.
- Adjustable input signal filter to attenuate noisy control input signal.
- Numbered screen prompts for set-up and service identification.
- Keypad lock-out with user selected access levels.
- " Time-delayed scrolling display loop will begin cycling ten minutes after no buttons have been pressed and will display the next item for 30 seconds before continuing down the list - displays system parameters including: Low and High RH Alarms, System Faults, System Status, Set Point and Actual Space RH, Set Point and Actual Duct RH (optional), Outdoor Air Temperature (optional), Percent Power Output, Humidifier Output (in lbs/hr or kg/hr), Accumulated Run Time, Time to Clean timer, Water Level, Water Temperature Set Point and Actual (optional) and Control Type.
- INTAC® controller will automatically shut down when the ambient temperature is outside of designed operating temperature range.
- Full Networking and BAS communication capability. Communication connections shall provide two-way communication via EIA-485 connected Modbus between the INTAC® controller and the Building Automation System (BAS) (if utilized).
- High/Low humidity deviation alarm contacts (modulating control only).
- Multiple humidifiers can run off of one control signal from a BAS system. Humidifiers can be set up to run in parallel or in series.
- Safety Circuit/System Fault/Low Water alarm contacts.
- Flash Memory - allows system upgrades through EIA-485 terminal connections with a laptop computer and access to e-mail.

OPTIONAL FEATURES

- A. Variable air volume (VAV) anticipation control. The INTAC® software shall accept a modulating high-limit humidity input and space controlling RH input, then modulates the heater output to prevent over saturation of the supply air due to changes in the quantity of air flow. A compatible humidity sensor shall be shipped loose for field installation.
- 8. Cold weather relative humidity reset. The INTAC® software shall accept a modulating temperature input and automatically reduce the space RH set-point on a drop in the outside temperature. The reduction of the RH set-point during cold weather periods prevents damage due to interior window condensation.
- C. Reservoir thermocouple water temperature control. The INTAC® software provides standby water temperature sensing and freeze protection.
- D. A remote wall mount INTAC® user interface keypad/display module shall be furnished

Reference the "Specification Sample" for the humidifier base specification.



**Specification Sample
"GXDDR" Series**

Sheet No.

GXDDR-6

Humidifier

1. The humidifier (patent no. 6,705,535) shall be forced draft combustion gas burner type humidifier as manufactured by PURE Humidifier Co. of Chaska, Minnesota.
2. The humidifier shall be tested and approved by ETL/ETL-C Testing Laboratories, Inc to AGNCGA standards.
3. The humidifier shall have an evaporating reservoir with a gasket sealed cover which is capable of operating at pressures of at least 19"-48 cm (W.C.) without steam or water leaks. The reservoir shall be made of type 304 stainless steel with welded joints.
4. The humidifier shall be designed to facilitate easy removal of the gas heat exchanger for periodic scale removal and inspection. The cover and gas heat exchanger shall be secured to the unit by the use of quick release clamps. The gas heat exchanger shall be removable from the side of the humidifier without disturbing the cover or injection tube system's steam supply piping.
5. The gas heat exchanger shall be constructed of type 304 stainless steel with 2" round heat transfer tubes. Tubes shall be self cleaning via expansion and contraction of tubes. Coating of tubes is not required.
6. The humidifier shall require only 2 sides for service access.
7. The forced draft combustion burner shall be capable of expelling flue gases up to 100 ft (31 m) without the use of a power vent (sidewall or roof vented).
8. Unit shall be covered (except front face) with 3/4" (1.90 cm) thick fiberglass duct insulation. Insulation material shall have aluminum facing.
9. Provide support legs made of 1 1/4" x 1 1/4" x 1/4" (3.2 cm) angle Iron and painted with enamel gray paint. Distance from humidifier bottom to floor shall be 24" (61 cm).
10. Humidifier control cabinet shall be factory mounted and wired to the face of the humidifier reservoir.
11. A stainless steel float operated low water cut-off switch shall be provided. The float switch shall provide positive low water cut-out of the burner.
12. A stainless steel float operated water fill valve mounted on the top near the front shall be provided. The fill valve shall provide automatic refilling of the humidifier reservoir. The water inlet shall be located to allow a minimum water gap of 1-1/2" (3.81 cm).
13. The humidifier shall have a 3/4" (1.9 cm) overflow pipe to prevent overflowing of the humidifier reservoir.
14. The humidifier shall be provided with an ETL listed JIG NEMA 12 control cabinet shipped factory mounted and wired to the reservoir. The control cabinet shall be made of 14 gauge steel with ANSI 61 gray polyester powder coating, continuous hinge and oil-resistant gasket. The panel shall include a factory wired sub-panel with gas valve interlock, fused control circuit transformer, numbered terminal block and main power fuse(s).
15. The control cabinet shall have a factory wired time delay relay circuit. The delay circuit shall prevent cycling of the low water interlock circuit due to water fluctuations within the humidifier reservoir.
16. An INTAC® programmable electronic microprocessor humidifier control system shall be mounted and pre-wired to the humidifier control panel door. The INTAC® controller shall provide low water cut-off and safety switch interlock functions.

Reference the "Options" page for a description of the options which can be added to the base specification.



Dimensions & Layout GXDDR-8

Sheet No.
GXDDR-4

Required Clearance:

For recommended service and maintenance purposes the following clearances should be maintained:

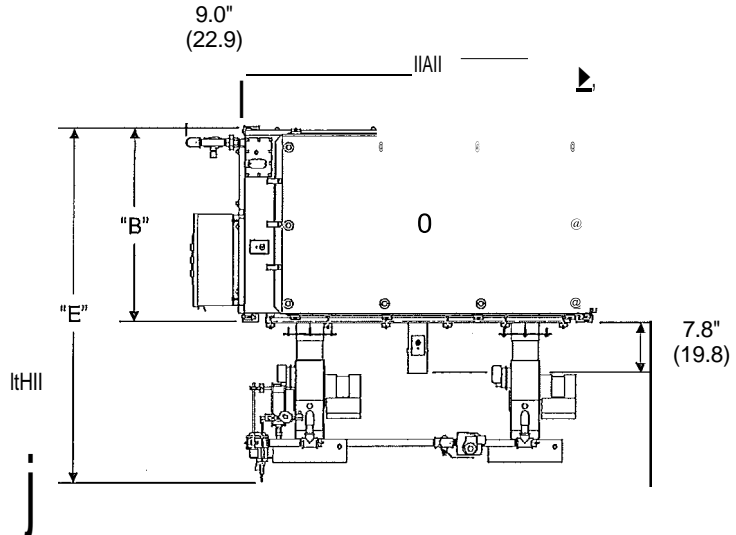
Right side, see Top View for required clearance

Front side, NEC requires 36" clearance to control cabinet

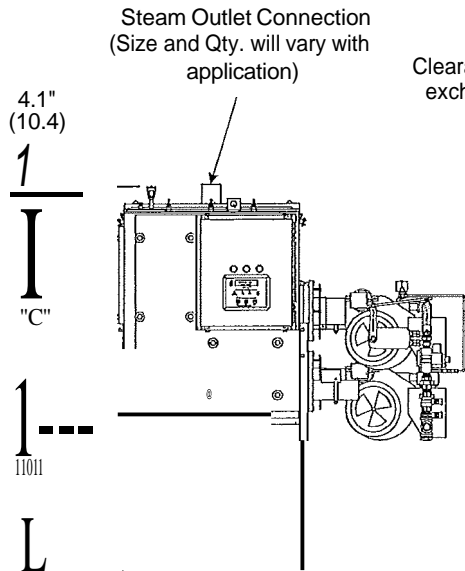
Left side, 6" for access

Rear, 6" for access

Top, 17" for cover and float plate assembly removal

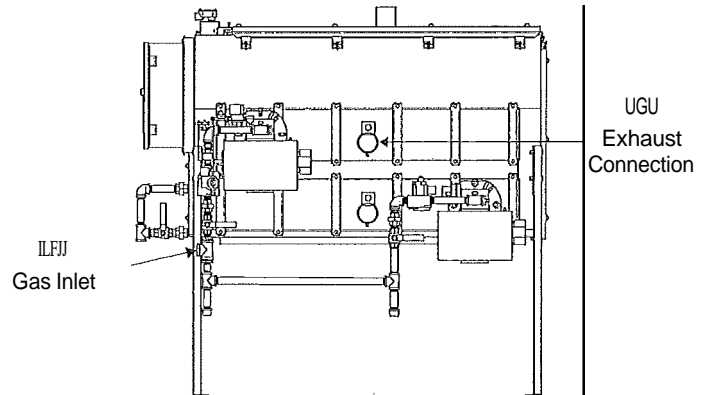


Top View



Front View

Clearance required for exchanger removal



Right Side View

Unit Dimensions in Inches (cm)

Model No.	Dim."A"	Dim."B"	Dim."C"	Dim."D"	Dim."E"	Dim."F"	Dim."G"	Dim."H"
GXDDR-8	54.0" (137.2)	30.1" (76.5)	32.5" (82.6)	24.0" (60.9)	54.7" (138.9)	1"-NPT	3.0" (7.6)	66.0" (167.6)

Heat exchangers have a top and bottom. There is a break (crease) on the bottom side of the heat exchanger, Do not install heat exchanger upside-down.

All dimensions are approximate and subject to change at manufacturer's discretion.



SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

**NEW MEXICO
ENVIRONMENT DEPARTMENT**

Air Quality Bureau

525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico, 87505
Phone (505) 476-4300 Fax (505) 476-4375
www.env.nm.gov



RYAN FLYNN
Cabinet Secretary-Designate
BUTCH TONGATE
Deputy Secretary

TECHNICAL MEMORANDUM

DATE: September 9, 2013
TO: All Permitting Staff
FROM: Daren Zigich
THROUGH: Ted Schooley, Permit Program Manager
Ned Jerabek, Major Source Section Manager
SUBJECT: Calculating TSP, PM-10 and PM-2.5 from Cooling Towers

The goal of this memo is to offer a Department approved step-by-step approach for calculating particulate emissions from cooling towers. While the Department encourages using this approach, other approaches, that do not use a droplet settling ratio may be approved on a case-by-case basis.

Due to the variability of methods used by permittees to estimate particulate emissions from cooling towers, a consistent, defensible approach is warranted. For example, some permittees have used a droplet settling ratio from Reference 3 to lower the total potential emissions rate of total particulate matter (PM_{total}). This is unacceptable due to the following:

1. Particulate settling is not appropriate since any verification testing would be completed inside the cooling tower fan stack. All particulate mass that can be measured by an EPA reference method and are emitted to the atmosphere shall be counted as particulate emissions. Particle size distribution can then be used to modify the emission rate of each regulated particulate size.
2. The Department is not aware of information that verifies the droplet settling data is representative for arid climates where evaporation rates are high.
3. The droplet size distribution and % mass data from Reference 1 only consider droplets up to 600 microns. Reference 3 states that settling only exists for droplets greater than 450 microns. Reference 1 lists the % mass of droplets greater than 450 microns to be less than 1 percent of the total mass.

4. Reference 2 test data shows that towers with significant drift droplet diameters greater than 600 microns usually suffer from poor installation of the drift eliminator or from poor water distribution due to issues with the tower packing. Large droplets may indicate that the assumed or guaranteed drift eliminator efficiency is not being met. Providing emissions credit for poor installation, operation or maintenance runs counter to general Department practice.
5. References 1 and 2 make no reference to and assign no credit for the settling theory stated in Reference 3.

For the above reasons, the Reference 3 settling ratio is not an acceptable emissions reduction approach.

Acceptable Calculation Method

Cooling tower particulate emissions are a function of the Drift rate and the concentration of dissolved solids present in the water. The Drift rate is normally listed as a percentage of the circulating water flow rate of the cooling tower.

Step 1 – Establish maximum water circulation rate (Q_{circ}) for the cooling tower. This is usually dependent on the capacity of the circulation pumps and the plant cooling system and should be reported as gallons per minute (gpm). The circulation rate is the sum of the circulation rates for each cell in the tower and thus represents the total flow for the tower.

Step 2 – Establish Drift rate (Q_{drift}) of the cooling tower. This information is dependent on the drift eliminator design and is usually supplied by the tower manufacturer. If manufacturer data is unavailable, the standard drift of 0.02 percent, listed in AP-42, should be used.

Step 3 – Establish maximum Total Dissolved Solids concentration (TDS) in the circulating cooling water. This is dependent on the facility's operations. TDS should be reported as parts per million (ppm) or mg/l.

Step 4 – Calculate total potential hourly particulate emissions (PM_{total}) in pounds per hour (lbs/hr).

$$PM_{\text{total}} = \text{TDS}(\text{mg/l}) \times \frac{1(\text{lbs/mg})}{453,600} \times 3.785(\text{l/gal}) \times Q_{\text{circ}}(\text{gpm}) \times \frac{Q_{\text{drift}}(\% Q_{\text{circ}})}{100} \times 60(\text{min/hr})$$

Example: TDS = 3000 ppm or mg/l, $Q_{\text{circ}} = 50,000$ gpm, $Q_{\text{drift}} = 0.004\%$

$$PM_{\text{total}} = 3000 \times (1/453,600) \times 3.785 \times 50,000 \times (0.004/100) \times 60$$

$$PM_{\text{total}} = 3.0 \text{ lbs/hr}$$

Step 5 – Estimate particulate size distribution of the PM_{total} to determine potential emissions of TSP/PM, PM₁₀ and PM_{2.5}.

The current estimating technique used in References 1 and 2 employs a formula for determining a potential particulate size (i.e. diameter) for a given set of variables. The variables are:

$$\begin{aligned}d_d &= \text{Drift droplet diameter, microns} \\C_{\text{TDS}} &= \text{Concentration of TDS in the circulating water, ppm} \times 10^{-6} \\ \rho_w &= \text{Density of Drift droplet, g/cm}^3 \\ \rho_{\text{salt}} &= \text{Density of particle, g/cm}^3\end{aligned}$$

The equation for determining particle size/diameter (d_p), in microns is:

$$d_p = \frac{d_d}{(\rho_{\text{salt}} / \rho_w C_{\text{TDS}})^{1/3}}$$

The tables below list particle size related to droplet size for various concentrations (1000 ppm to 12,000 ppm) of TDS in the circulating cooling water. The density of the water droplet (ρ_w) is assumed to be 1.0 g/cm³ (based on density of pure water) and the average density of the TDS salts is assumed to be 2.5 g/cm³. This assumed density is selected based on the average density of common TDS constituents, CaCO₃, CaSO₄, CaCl₂, NaCl, Na₂SO₄, and Na₂CO₃. If actual circulating water constituents are available, that data may be used to estimate the dissolved solids average density.

To determine the droplet size that generates particulate matter of the applicable regulated diameters, TSP/PM (defined as 30 microns or less per NM AQB definition¹), PM₁₀ and PM_{2.5}, find the column in the table that matches the maximum circulating water TDS concentration and read the values associated with the PM_{2.5}, PM₁₀ and TSP/PM boxes. Boxed values are not exactly equal to the applicable sizes, but are the values greater than and closest to the applicable sizes, given the listed water droplet values from Reference 1.

The far right column of each table provides mass distribution data from Reference 1. The values indicate what percent of the total particulate mass emission, calculated in Step 4, is associated with the applicable particulate size. Read the value that is on the same line (same color) as the applicable particulate size associated with the specified TDS concentration column.

Note: Although the relationship between droplet size and percent mass is not linear, a linear interpolation of the tabulated data is acceptable between two adjacent rows (particle size) to determine an estimate of percent mass for a specific particle size (i.e. PM₃₀, PM₁₀ and PM_{2.5}). Particle sizes for droplets with a non-listed TDS ppm concentration may be calculated using the equation in Step 5.

Example: Continuing from Step 4,

$$PM_{\text{total}} = 3.0 \text{ lbs/hr}$$

$$C_{\text{TDS}} = 3000 \text{ ppm}$$

From Table:

$$PM_{2.5}: \quad d_d = 30 \quad \% \text{Mass} = 0.226\%$$

$$PM_{10}: \quad d_d = 110 \quad \% \text{Mass} = 70.509\%$$

$$\text{TSP/PM}: \quad d_d = 270 \quad \% \text{Mass} = 96.288\%$$

The mass emission of each applicable particulate size is:

$$PM_{2.5} = PM_{\text{total}}(\% \text{Mass}/100) = 3.0(0.00226) = 0.007 \text{ lbs/hr}$$

$$PM_{10} = 3.0(.70509) = 2.115 \text{ lbs/hr}$$

$$\text{TSP/PM} = 3.0(.96288) = 2.889 \text{ lbs/hr}$$

¹Definition of TSP for purposes of permitting emission sources, 11/2/09, see [P:\AQB-Permits-Section\NSR-TV-Common\Permitting-Guidance-Documents](#) – Index & Links document

Size Distribution

1000 ppm (TDS)		2000 ppm		3000 ppm		% Mass
d _d	d _p	d _d	d _p	d _d	d _p	≤
10	0.7387304	10	0.930527	10	1.0650435	0
20	1.4774608	20	1.8610539	20	2.130087 PM2.5	0.196
30	2.2161912	30	2.7915809 PM2.5	30	3.1951306 PM2.5	0.226
40	2.9549216 PM2.5	40	3.7221079	40	4.2601741	0.514
50	3.693652	50	4.6526349	50	5.3252176	1.816
60	4.4323825	60	5.5831618	60	6.3902611	5.702
70	5.1711129	70	6.5136888	70	7.4553046	21.348
90	6.6485737	90	8.3747427	90	9.5853917	49.812
110	8.1260345	110	10.235797 PM10	110	11.715479 PM10	70.509
130	9.6034953	130	12.096851	130	13.845566	82.023
150	11.080956 PM10	150	13.957905	150	15.975653	88.012
180	13.297147	180	16.749485	180	19.170783	91.032
210	15.513339	210	19.541066	210	22.365914	92.468
240	17.72953	240	22.332647	240	25.561045	94.091
270	19.945721	270	25.124228	270	28.756175	94.689
300	22.161912	300	27.915809	300	31.951306 TSP/PM30	96.288
350	25.855564	350	32.568444 TSP/PM30	350	37.276523	97.011
400	29.549216	400	37.221079	400	42.601741	98.34
450	33.242868 TSP/PM30	450	41.873714	450	47.926958	99.071
500	36.93652	500	46.526349	500	53.252176	99.071
600	44.323825	600	55.831618	600	63.902611	100

Water Quality Report 2019

Distribution Zone 13

[Definitions & Terms](#) [Notes & Sources of Substances](#)

Regulatory Compliance Monitoring at [EPTDS](#)

<u>Metals</u>	Sample Collection Years	Units	Detection	Zone 13	City-Wide	Maximum Contaminant Level (MCL)	MCL Goal
Arsenic	2017	PPB	Average Range	0	2 0 - 9	10	Zero
Barium	2017	PPM	Average Range	0	0.02 0 - 0.2	2	2
Chromium	2017	PPB	Average Range	0	1 0 - 7	100	100
<u>Minerals</u>							
Fluoride	2017	PPM	Average Range	0.35	0.49 0.25 - 1.18	4	4
<u>Nutrients</u>							
Nitrate	2019	PPM	Average Range	0.23	0.35 0.06 - 3.25	10	10
<u>Organics</u>							
Total Xylenes	2019	PPM	Average Range	0	0.0005 0 - 0.00057	10	10
<u>Radionuclides</u>							
Radium 226 + 228	2014 - 2017	pCi/L	Average Range	0.26	0.1794 0.02 - 0.41	5	Zero
Gross Alpha Particle Activity	2014 - 2017	pCi/L	Average Range	0.3	0.8 0.1 - 2.5	15	Zero
Uranium	2014 - 2017	PPB	Average Range	0	2 0 - 9	30	Zero

Voluntary Comprehensive Monitoring in Distribution

(Samples taken every three months, 2019 results)

Zone 13

<u>Metals</u>	Units	Minimum	Average	Maximum	City Average	MCL
Arsenic	PPB	0	1	3	1 0 - 8	10
Chromium	PPB	0	0	1	1 0 - 4	100
Iron	PPM	0	0.003	0.03	0.009 0 - 0.16	0.3 a
<u>Minerals</u>						
Fluoride	PPM	0.50	0.62	0.79	0.62 0.37 - 1	4
<u>Nutrients</u>						
Nitrate	PPM as N	0.00	0.00	0.00	0.13 0 - 2.32	10
<u>General Chemistry</u>						
Alkalinity	PPM as CaCO ₃	64	87.4	115.8	96 64 - 142	~
Bicarbonate	PPM as CaCO ₃	63	87.1	115.4	96 63 - 141	~
Calcium	PPM	46	56	68	53 23 - 74	~
Chloride	PPM	28	36	41	34 14 - 54	250 a
Hardness	grains/gallon	7.8	9.6	11.6	9.1 4.4 - 12.7	~
Magnesium	PPM	3.8	5.6	7.3	5.6 2.5 - 7.9	~
Potassium	PPM	0.0	2.1	3.4	3 0 - 7	~
Silica	PPM as SiO ₂	16	22	28	27 16 - 66	~
Sodium	PPM	0.15	19	30	25 0.15 - 68	~
Sulfate	PPM	56	75	106	72 36 - 116	250 a
Total Dissolved Solids	PPM	234	278	350	277 188 - 368	500 a
Conductance	micromhos/cm	368	455	580	482 310 - 662	~
Free Chlorine Residual	PPM	0.8	1.04	1.31	1 0.3 - 1.4	~
pH	Standard Units	7.3	7.5	7.8	7.7 7.2 - 8.3	~
Temperature	Fahrenheit	48.2	63.2	83	62 37 - 88	~

a- Represents the USEPA Secondary Maximum Contaminant Level (SMCL). Secondary Drinking Water Standards are unenforceable federal guidelines regarding taste, odor, color and certain other non-aesthetic effects of drinking water. USEPA recommends them as reasonable goals, but federal law does not require water systems to comply with them.

"GREEN" THINKING
AIRGARD is committed to using third party testing labs to validate our performance on a wide range of gases.

ROOLCTS TECH DATA CASE STUDIES AelOUTUS CONTACT US

Safely eliminates toxins and corrosives

INLETS



Heated/CVO
Combining an internally heated, ten lined and insulated inlet design with our automatic and plunger, this scrubber can reduce your scrubber related downtime to zero.



Poly Etch / CVO
Highly efficient 93% scrubber with patented gas inlet devices that minimize restrictions.



High Temperature Inlet
For high temperature gas stream up to 220°C.



Epi-taxial
Airgard specialized gas entry device that minimizes inlet restrictions and an automatic gas inlet plunger that extends the time on maintenance interval to every 6 months.

PROCESSES/GASES

FAQs

FACILITY DRAWINGS

CERTIFICATION

(E @

SEMIS2

ATEX

"The AIRGARD scrubber is our system of choice for Epi abatement."

~ Unattributed Author

Processes/Gases

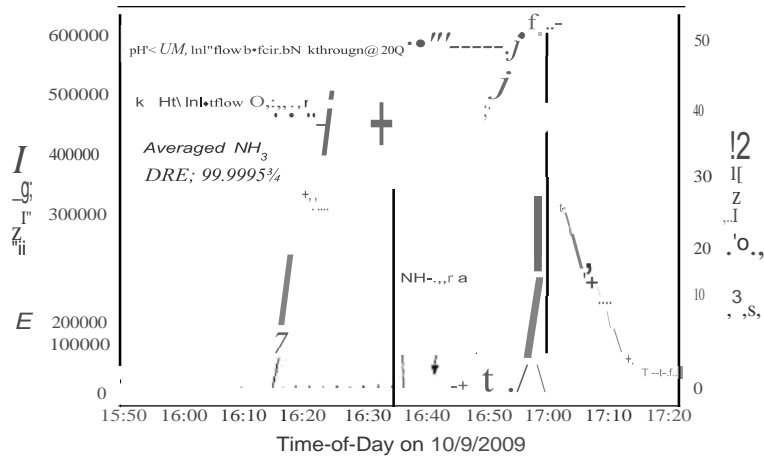
AIRGARD is committed to using third party testing labs to validate our performance on a wide range of gases.

Process/Gas	Efficiency (%)	Notes
Ammonia	>99.999%	
Acetic Acid	>99.99%	
Hydrogen Sulfide	>99.99%	
Hydrochloric Acid	>99.99%	
Hydrofluoric Acid	>99.99%	
Sulfur Dioxide	>99.99%	
Nitrogen Oxides	>99.99%	
Carbon Monoxide	>99.99%	
Carbon Dioxide	>99.99%	
Hydrogen Cyanide	>99.99%	
Phosgene	>99.99%	
Hydrocyanic Acid	>99.99%	
Organic Chlorides	>99.99%	
Organic Nitrates	>99.99%	
Organic Sulfides	>99.99%	
Organic Acids	>99.99%	
Organic Aldehydes	>99.99%	
Organic Ketones	>99.99%	
Organic Esters	>99.99%	
Organic Solvents	>99.99%	

Click on this table to see larger view in pdf.



NH₃ Concentration Profiles



Processes/Gases

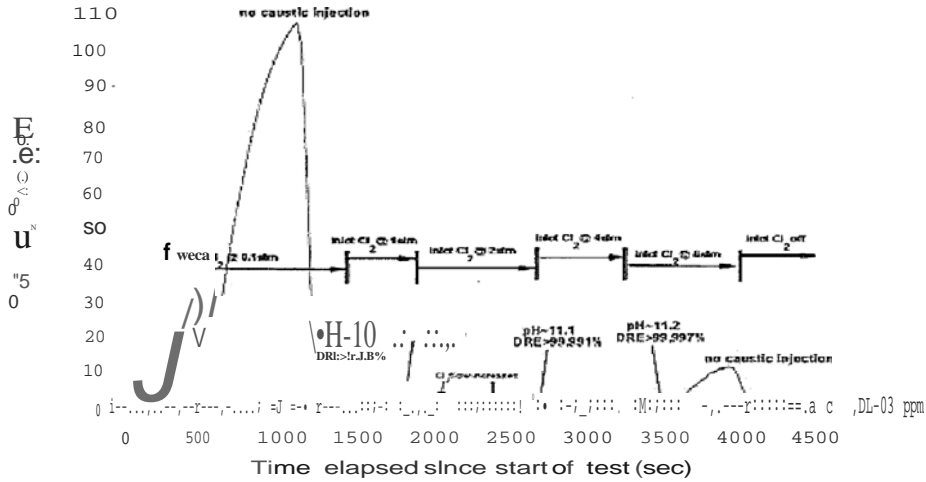
AIRGARD is committed to using third party testing labs to validate our performance on a wide range of gases.

Gas	Chemical Name	Common Name	Carrier Gas	Flow Rate	TH1 Method	DRE	Output Concentration PPM
HH	Ammonia	Ammonia	59011fl	111111	FTIR	>tt,tt1%	<0.0t
HH	Ammonia	Ammonia	22011m	1k1m	FTIR	>tUtt%	<0.0\$
HH	Ammonia	Ammonia	80011,n	230.lm	FTIR	>9t.t9%	<1.0
8Cl ₂	Sotott Tric.hkri6e	Bo«in Tf1chlotloH	200.tn.	100"cm	FTIR	>9Ut+4	<0.OOS
C ₂	Chlorine	Chlorine	20011m	*****		"9UJC.	<1.0
C ₂	Chlorine	Chlorine	t1hm	\$0. 100,200\$Ccm	FTUV	No pH OOIICtol.M.S.	HopHc.offitGI
●●●	Hydrogen	Hydrogen	23011m	920=m	FTIR	tU,97%	25,32,50
FZ	Acetylene	Acetylene	●●●●●	●●●●●	C:htmluminMtfll«	>9t.9t%	<1.0
IOS	Toluene	TEOS	100.lm	1.klm	FTIR	●●●●●	<0.5
TtPO	Triethylphosphine	TEPO	20011m	*****	FTIR	n.,11.	<10.0'
●●●●	Triethylborate	TISB	20011m	3601ocm	FTIR	>99,9"	<1.0
WF	Hydrofluoric acid	Hydrofluoric acid	20011,n	2.klm	FTIR	>9'9,9%	<1.0
HCl	Hydrochloric acid	Hydrochloric acid	22011m	*****	EPA26	>9,9,9,9,9	<0.1
HCl	Hydrochloric acid	Hydrochloric acid	00.lm	:io.om	EPAU	>99.	<0.10
SiHOC	Hydrochloric acid	Hydrochloric acid	UOtlm	»ooccm	FTIR	>99.	<0AO
\$ICM	Silicon	●●●●●	52011m	1.klm	IIII	>H, llt, l,	<0.10
H2S	Tetrahydrothiophene	Tetrahydrothiophene	●●●●●	●●●●●	●●●●●	>H, llt, l,	<0.50
H2S	Hydrogen sulfide	Hydrogen sulfide	IIOIIII	IIIIII	IIII	>tt.t%"	●●●●
H2Se	Hydrogen selenide	Hydrogen selenide	220,1m	2.klm	FTIR	>tl:.6%"	<0.15
HF	Hydrogen fluoride	Hydrogen fluoride	200,1m	Uhlm	FTIR	>M.K	<0.02
TICM	Trimethylchloride	"Ttkle"	200.tn	33Stc:cm	FTIR	>99.9%	<1.0
SiH	Trichlorosilane	Silicon Trichloride	20011m	2. W m	FTIR	>99.9%	<1.0
OCS	Carbon disulfide	Carbon disulfide	200.rm	●●●●●	FTIR	>It.tin.	>9t.t1%
TMA	Trimethylamine	Trimethylamine	2u,1m	.Sh«m	FT1R	>9t.t1%	<0, 0 1
TMG	Trimethylamine	Trimethylamine	21ihlm	1.blm	FT1R	>99.5%	<1.0
TIG	Triethylamine	Triethylamine	18S11m	31scm	FTIR	.99,5%	<1.0
						>99.3%	<1.0

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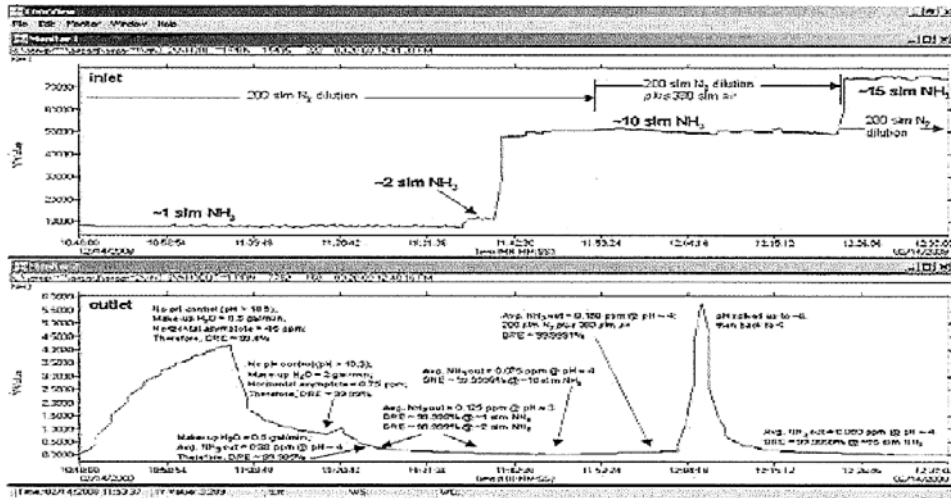
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pH Correlation During Cl₂ Abatement

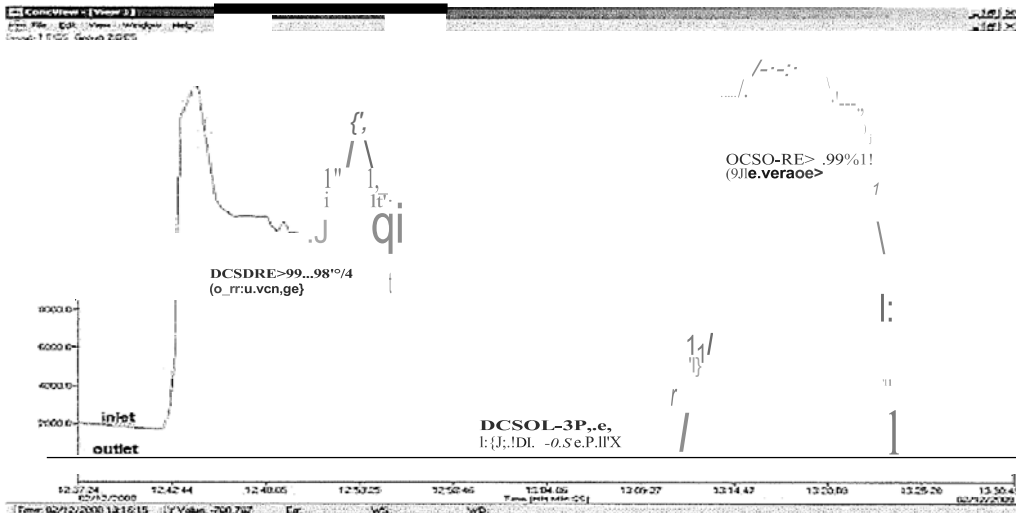


URS

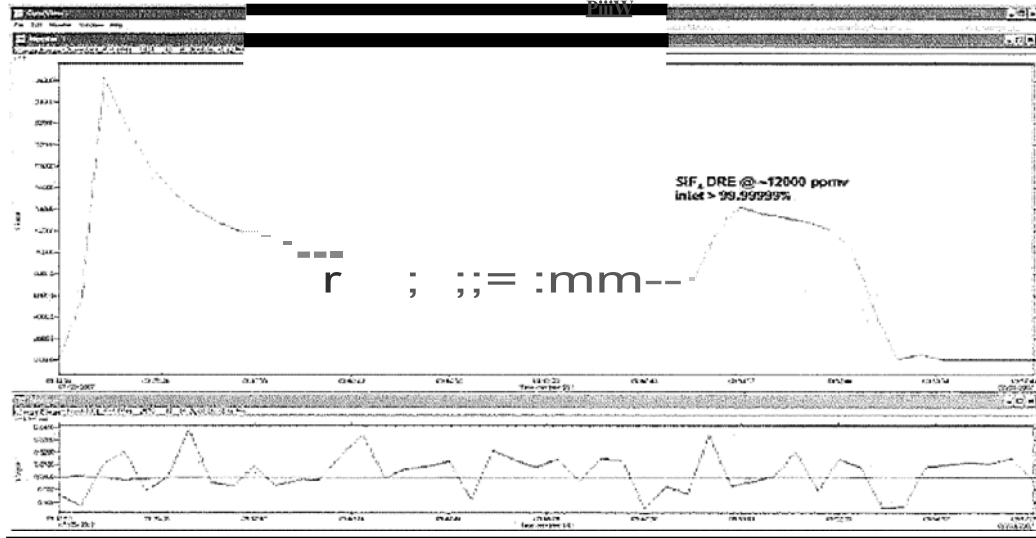
pH Correlation during NH₃ abatement: y-axis in ppmv, x-axis in time-of-day (Inlet NH₃ per trace, Outlet NH₃ lower trace)



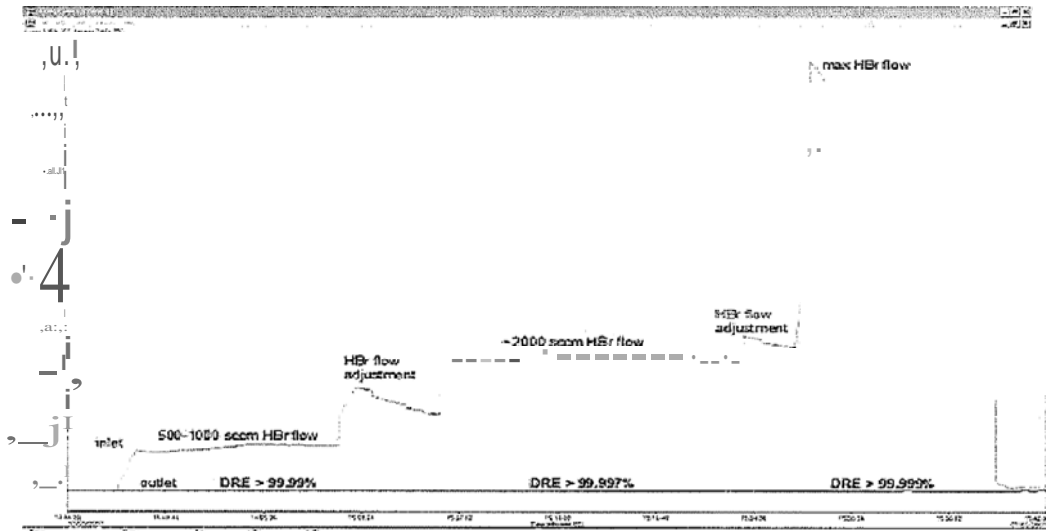
DCS abatement test; y-axis in P.P.m. x-axis in time-of-day (Inlet DCS in red, outlet DCS in blue)



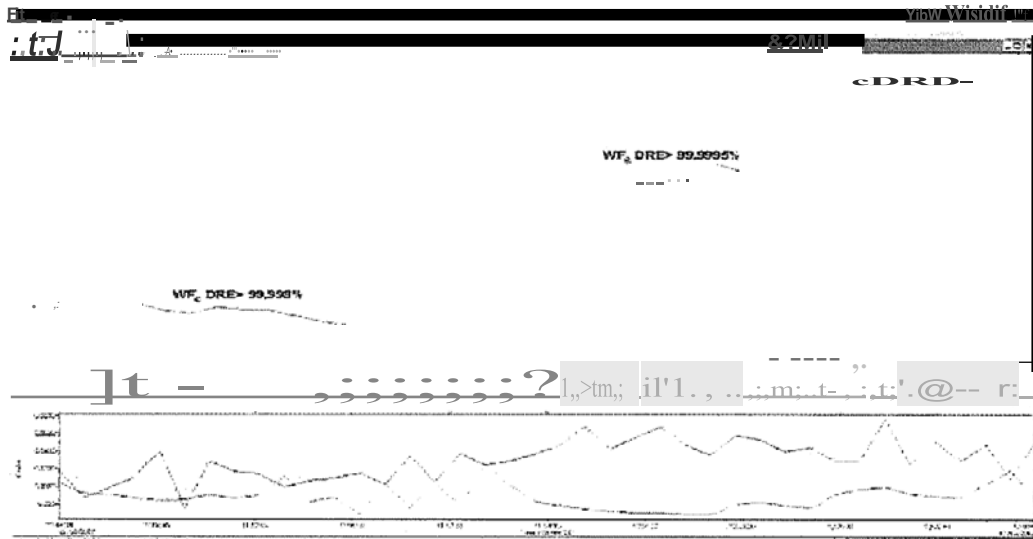
SIF₄ abatement test: y-axes in ppbmv, x-axes in time-of-day



HBr Abatement Test: y-axis in ppmv, x-axis in time-of-day



WF₅ abatement test: y-axes in ppmv, x-axes in time-of-day



Scrubber Parameters (FS1, FS2, and FS3)

FS - 1 (Air Permit Requirement*)	Water Flow (FM1)	70 - 90 gpm*
	Water Flow (FM2)	70 - 90 gpm*
	Spray Head Pressure	32 - 45 psi*
	Make Up Water Flow	15 - 30 gpm*
	MU Water on ICW, Reclaim or Mix	As read
	Scrubber inlet static pressure	As read
	Scrubber mid static pressure	As read
	Scrubber fan inlet static pressure	As read
	Clean The Screens	Y/N
	Scrubber Fan VFD Setpoint	As read
FS-2 (Air Permit Requirement*)	Water Flow (FM1)	70 - 90 gpm*
	Water Flow (FM2)	70 - 90 gpm*
	Spray Head Pressure	32 - 45 psi*
	Make Up Water Flow	15 - 30 gpm*
	MU Water on ICW, Reclaim or Mix	As read
	Scrubber inlet static pressure	As read
	Scrubber mid static pressure	As read
	Scrubber fan inlet static pressure	As read
	Clean The Screens	Y/N
	Scrubber Fan VFD Setpoint	As read
FS-3 (Air Permit Requirement*)	Water Flow (FM1)	60 - 80 gpm*
	Water Flow (FM2)	60 - 80 gpm*
	Spray Head Pressure	22 - 30 psi*
	Make Up Water Flow	10 - 20 gpm*
	Scrubber inlet static pressure	As read
	Scrubber mid static pressure	As read
	Scrubber fan inlet static pressure	As read
	MU Water on ICW, Reclaim or Mix	As read
	Clean The Screens	Y/N
	Scrubber Fan VFD Setpoint	As read

Material Safety Data Sheets

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Phone (716) 285-1494

SDS
Niacet
Anhydrous HCl

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SAFETY DATA SHEET

Anhydrous HCl

SECTION I – CHEMICAL PRODUCT IDENTIFICATION

Product Name: Hydrogen Chloride

Product Overview: Anhydrous hydrogen chloride, also referred to as hydrogen chloride gas, is a clear, colorless gas with an extremely sharp odor. "Anhydrous" means dry or without water. Anhydrous hydrogen chloride is extremely attracted to water and when exposed to air, quickly reacts with the moisture in the air forming fumes, which are a mist of hydrochloric acid. NIACET® anhydrous hydrogen chloride is sold as liquefied gas. Aqueous hydrochloric acid is a highly corrosive liquid that is formed upon mixing anhydrous hydrogen chloride with water or moisture in the air. It emits a pungent odor and strong fumes in moist air. The color ranges from clear to slightly yellow.

Chemical Synonyms: Hydrochloric Acid; Anhydrous hydrochloric acid; Chlorohydric acid; Hydrochloric acid gas; Hydrochloride; Muriatic acid; HCl; Hydrochloric acid, anhydrous; Hydrogen-chloride-anhydrous-; Acide chlorhydrique; Acido cloridrico; NA 1789; UN 1789; UN 2186; Anhydrous hydrogen chloride; Hydrogen chloride (acid); Marine acid; Soldering acid; Spirits of salts

Emergency Contact: (800) 424-9300; (202) 483-7616

SECTION II – HAZARDS IDENTIFICATION

Physical State Gas. [COLORLESS TO SLIGHTLY YELLOW LIQUEFIED COMPRESSED GAS WITH AN IRRITATING ODOR; OR COLORLESS FUMING GAS WITH A PUNGENT, IRRITATING ODOR]

Emergency Overview **DANGER! CAUSES SEVERE RESPIRATORY TRACT, EYE AND SKIN BURNS. HARMFUL IF INHALED. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. CONTENTS UNDER PRESSURE.**
Do not puncture or incinerate container. Do not breathe gas. Do not get on skin or clothing. May cause target organ damage, based on animal data. Use only with adequate ventilation. Keep container closed. Do not get in eyes, on skin or on clothing. Avoid breathing gas. Wash thoroughly after handling.
Contact with rapidly expanding gases can cause frostbite.

Target Organs May cause damage to the following organs: lungs, upper respiratory tract, skin, eyes.

Routes of Entry Inhalation Dermal Eyes

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Potential acute health effects

- Eyes* Severely corrosive to the eyes. Causes severe burns. Contact with rapidly expanding gas may cause burns or frostbite.
- Skin* Severely corrosive to the skin. Causes severe burns. Contact with rapidly expanding gas may cause burns or frostbite.
- Inhalation* Toxic by inhalation. Severely corrosive to the respiratory system.
- Ingestion* Ingestion is not a normal route of exposure for gases

Potential chronic health effects

- Target organs* May cause damage to the following organs: lungs, upper respiratory tract, skin, eyes.
- Medical conditions aggravated by over-exposure* Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.
- See toxicological information (Section 11)

SECTION III – COMPOSITION, INFORMATION ON INGREDIENTS

Product Name

<u>Name</u>	<u>CAS Number</u>	<u>% Volume</u>	<u>Exposure Limits</u>
Hydrogen Chloride	7647-01-0	100	ACGIH TLV (United States, 1/2009) C: 2 ppm NIOSH REL (United States, 6/2009) CEIL: 7 mg/m ³ CEIL: 5 ppm OSHA PEL (United States, 11/2006) CEIL: 7 mg/m ³ CEIL: 5 ppm

SECTION IV – FIRST AID

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

- Eye contact* Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact* In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Frostbite* Try to warm up the frozen tissues and seek medical attention.
- Inhalation* Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical

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Issued March 2018

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attention immediately.

Ingestion As this product is a gas, refer to the inhalation section.

SECTION V – FIRE-FIGHTING

Flammability of the Product Non-flammable

Products of Combustion Decomposition products may include the following materials; halogenated compounds

Fire-fighting Media and Instructions Use an extinguishing agent suitable for the surrounding fire.

Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.

Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Special Protective Equipment for Fire-Fighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

SECTION VI – ACCIDENTAL RELEASE

Personal Precautions Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental Precautions Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for Clean-up Immediately contact emergency personnel. Stop leak if without risk.

Note: see Section I for emergency contact information and section XIII for information on waste disposal.

SECTION VII – HANDLING AND STORAGE

Handling Use only with adequate ventilation. Wash thoroughly after handling. High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Do not get in eyes, on skin or on clothing. Keep container closed. Do not get on skin or clothing. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Storage Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

SECTION VIII – EXPOSURE CONTROL/PERSONAL PROTECTION

Engineering Controls Use only with adequate ventilation. Use process enclosures, local exhaust

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Issued March 2018

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ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal Protection

- Eyes* Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Skin* Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory* Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal Protection for Large Spill Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Full chemical-resistant suit and self-contained breathing apparatus should be worn only by trained and authorized persons.

Product Name

<u>Name</u>	<u>CAS Number</u>	<u>% Volume</u>	<u>Exposure Limits</u>
Hydrogen Chloride	7647-01-0	100	ACGIH TLV (United States, 1/2009) C: 2 ppm NIOSH REL (United States, 6/2009) CEIL: 7 mg/m ³ CEIL: 5 ppm OSHA PEL (United States, 11/2006) CEIL: 7 mg/m ³ CEIL: 5 ppm

SECTION IX – PHYSICAL DATA

Molecular weight: 36.46 g/mole
Molecular formula: Cl-H
Boiling/condensation point: -85°C (-121°F)
Melting/freezing point: -113.9°C (-173°F)
Critical temperature: 51.5°C (124.7°F)
Vapor pressure: 613 (psig)
Vapor density: 1.3 (Air = 1)

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Specific Volume (ft³/lb): 10.5263

Gas Density (lb/ft³): 0.095

SECTION X – STABILITY AND REACTIVITY

Stability and Reactivity The product is stable.

Incompatibility with Extremely reactive or incompatible with the following materials:

various substances Alkalis

Moisture

Highly reactive or incompatible with the following materials:

Metals

Hazardous Under normal conditions of storage and use, hazardous decomposition products
Decomposition Products should not be produced.

Hazardous Under normal conditions of storage and use, hazardous polymerization will not
Polymerization occur.

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SDS
 Niacet
 Anhydrous HCl
 Issued March 2018

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SECTION XI – TOXICOLOGICAL INFORMATION

<u>Product/Ingredient Name</u>	<u>Result</u>	<u>Species</u>	<u>Dose</u>	<u>Exposure</u>
Hydrogen Chloride	LC50 Inhalation Gas	Rat	3124 ppm	1 hour
	LC50 Inhalation Gas	Mouse	1108 ppm	1 hour

IDLH 50ppm

Chronic Effects on Humans **CARCINOGENIC EFFECTS:** A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC.

May cause damage to the following organs: lungs, upper respiratory tract, skin, eyes.

Other Toxic Effects on Humans Extremely hazardous by the following route of exposure: of skin contact (corrosive), of eye contact (corrosive), of Inhalation (lung corrosive).

Specific Effects

Carcinogenic Effects No known significant effect or critical hazards
Mutagenic Effects No known significant effect or critical hazards
Reproduction Toxicity No known significant effect or critical hazards

SECTION XII – ECOLOGICAL INFORMATION

Aquatic ecotoxicity

<u>Product/Ingredient Name</u>	<u>Test</u>	<u>Result</u>	<u>Species</u>	<u>Exposure</u>
Hydrogen Chloride	-	Acute LC50 282000 ug/L Fresh water	Fish	96 Hours
	-	Acute LC50 260000 ug/L Marine water	Crustaceans	48 hours
	-	Acute LC50 240000 ug/L Marine water	Crustaceans	48 hours

Products of Degradation

Environmental Fate Not available
Environmental Hazards No known significant effects or critical hazards
Toxicity to Environment Not available

SECTION XIII – DISPOSAL

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation. Return cylinders with residual product to Niacet Corporation. Do not dispose of locally.





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 Fax (716) 285-1497
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SDS
 Niacet
 Anhydrous HCl

Issued March 2018

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SECTION XIV – TRANSPORTATION

<u>Regulatory Information</u>	<u>UN Number</u>	<u>Proper Shipping Name</u>	<u>Class</u>	<u>Packing Group</u>	<u>Label</u>	<u>Additional Information</u>
DOT Classification	UN1050	Hydrogen Chloride, Anhydrous	2.3	Not Applicable (Gas)	 	Reportable quantity: 5000 lbs. (2270 kg) Limited quantity: Yes Packaging Instruction <i>Passenger aircraft</i> Quantity limitation: Forbidden <i>Cargo aircraft</i> Quantity limitation: Forbidden Special Provisions: 3
TDG Classification	UN1050	Hydrogen Chloride, Anhydrous	2.3	Not Applicable (Gas)	 	Explosive Limit and Limited Quantity Index: 0 ERAP Index: 25 <i>Passenger Carrying Ship Index:</i> Forbidden <i>Passenger Carrying Road or Rail Index:</i> Forbidden Special provisions: 38
Mexico Classification	UN1050	Hydrogen Chloride, Anhydrous	2.3	Not Applicable (Gas)		None

Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.

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SDS
Niacet
Anhydrous HCl
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SECTION XV – REGULATORY INFORMATION

United States

U.S. Federal Regulation United States Inventory (TSCA 8b): This material is listed or exempted.
SARA 302/304/311/312 extremely hazardous substances: Hydrogen chloride
SARA 302/304 emergency planning and notification: Hydrogen chloride
SARA 302/304/311/312 hazardous chemicals: Hydrogen chloride
SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
Hydrogen chloride: Sudden release of pressure, Immediate (acute) health hazard,
Delayed (chronic) health hazard

Clean Water Act (CWA) 311: Hydrogen chloride

Clean Air Act (CAA) 112 regulated flammable substances: Hydrogen chloride

Clean Air Act (CAA) 112 regulated toxic substances: Hydrogen chloride

SARA 313

	Product Name	CAS Number	Concentration
<i>From R – Reporting Requirements</i>	Hydrogen Chloride	7647-01-0	100
<i>Supplier Notification</i>	Hydrogen Chloride	7647-01-0	100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State Regulations Massachusetts Substances: This material is listed.
New Jersey Hazardous Substances: This material is listed.
New Jersey Toxic Catastrophe Prevention Act: This material is listed.
New York Acutely Hazardous Substances: This material is listed.
Pennsylvania RTK Hazardous Substances: This material is listed.

Canada

WHMIS (Canada)

Class A: Compressed gas.
Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class E: Corrosive material

Canadian NPRI: This material is listed.

SECTION XVI – OTHER INFORMATION

United States Label Requirements CAUSES SEVERE RESPIRATORY TRACT, EYE AND SKIN BURNS.
HARMFUL IF INHALED.

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Niacet
Anhydrous HCl

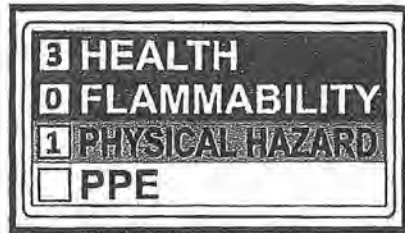
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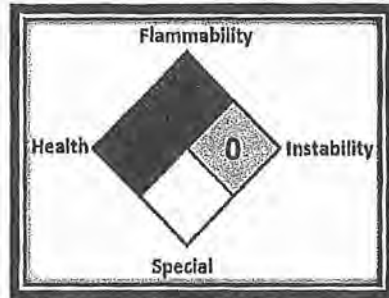
MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
CONTENTS UNDER PRESSURE.

Canada Label Requirements Class A: Compressed gas.
Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class E: Corrosive material

Hazardous Material Information System (USA)



National Fire Protection Association (USA)



This chemical you are receiving may need to be reported to the Department of Homeland Security

The Department of Homeland Security (DHS) regulates security at facilities that have certain chemicals and that DHS considers high risk under the Chemical Facility Anti Terrorism standards (CFATS) program (6 CFR Part 27). This chemical is a CFATS chemical of interest. Facilities that come into possession of a regulated chemical may need to report their holdings to DHS within 60 days by filling a Top Screen Survey. To determine if you need to report to DHS contact the CFATS Help Desk at (866-323-2957) or at csat@hq.dhs.gov.

Notice to reader:

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Product: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)	SDS No. P-19-6467 April 2013
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1. Chemical Product and Company Identification

Product Name: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)	Trade Names: Not applicable.
Chemical Name: Mixtures of phosphine and hydrogen	Synonyms: Not applicable.
Chemical Family: Not applicable.	Product Grades: None assigned.
Emergency Telephone Numbers:*	Company Name: Praxair, Inc. 39 Old Ridgebury Road Danbury, CT 06810-5113
Onsite emergencies: 1-800-645-4633	
CHEMTREC: 1-800-424-9300	

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier, Praxair sales representative, or call 1-800-PRAXAIR (1-800-772-9247).*

2. Hazard Identification

EMERGENCY OVERVIEW

DANGER! Flammable high-pressure gas.

May be harmful if inhaled.

May cause rapid suffocation.

May cause dizziness and drowsiness.

Can form explosive mixtures with air.

Can ignite on contact with air.

Burns with invisible flame.

Self-contained breathing apparatus and protective clothing must be worn by rescue workers.

Under ambient conditions, this is a colorless, odorless gas.

OSHA REGULATORY STATUS: The components of this mixture are considered hazardous by the OSHA Hazard Communications Standard (29 CFR 1910.1200).

← A vertical line in the left margin indicates revised or new material.

Product: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)	SDS No. P-19-6467 April 2013
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POTENTIAL HEALTH EFFECTS:

Effects of a Single (Acute) Overexposure

Inhalation. Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headache, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

Skin Contact: No harm expected.

Swallowing: This product is a gas at normal temperature and pressure.

Eye Contact: May cause eye irritation.

Effects of Repeated (Chronic) Overexposure: No harm expected.

Other Effects of Overexposure: Asphyxiant. Lack of oxygen can kill.

Medical Conditions Aggravated by Overexposure: Inhalation may aggravate asthma and inflammatory or fibrotic pulmonary disease.

CARCINOGENICITY: The components of this mixture are not listed by NTP, OSHA, or IARC.

POTENTIAL ENVIRONMENTAL EFFECTS: None known. For further information, see section 12, Ecological Information.

3. Composition/Information on Ingredients

See section 16 for important information about mixtures.

COMPONENT	CAS NUMBER	CONCENTRATION
Phosphine	7803-51-2	1-499 ppm
Hydrogen	1333-74-0	Balance

4. First Aid Measures

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.

SKIN CONTACT: An unlikely route of exposure. This product is a gas at normal temperature and pressure.

SWALLOWING: An unlikely route of exposure. This product is a gas at normal temperature and pressure.

EYE CONTACT: Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are thoroughly flushed. Immediately see a physician, preferably an ophthalmologist.

NOTES TO PHYSICIAN: *There is no specific antidote. Treatment of suspected overexposure should be directed at the control of symptoms and the clinical condition of the patient.*

Product: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)	SDS No. P-19-6467 April 2013
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Contact the Poison Control Center in your area for additional information on patient management and follow-up.

5. Fire Fighting Measures

FLAMMABLE PROPERTIES: Flammable gas. Flame is nearly invisible. Escaping gas may ignite spontaneously. Hydrogen has a low ignition energy. Fireball forms if gas cloud ignites immediately after release. Forms explosive mixtures with air and oxidizing agents.

SUITABLE EXTINGUISHING MEDIA: CO₂, dry chemicals, water spray, or fog.

PRODUCTS OF COMBUSTION: Water (H₂O).

PROTECTION OF FIREFIGHTERS: DANGER! Flammable high-pressure gas. (See section 2.) Evacuate all personnel from danger area. Do not approach area without self-contained breathing apparatus and protective clothing. Immediately spray cylinders with water from maximum distance until cool, taking care not to extinguish flames. Solid streams of water may be ineffective. Remove ignition sources if without risk. If flames are accidentally extinguished, explosive reignition may occur. Reduce toxic vapors with water spray or fog. Stop flow of gas if without risk, while continuing cooling water spray. Remove all containers from area of fire if without risk. Allow fire to burn out. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.

Specific Physical and Health Hazards: Gas may form explosive mixtures with air and oxidizing agents. Heat of fire can build pressure in cylinder and cause it to rupture. No part of cylinder should be subjected to a temperature higher than 125°F (52°C). Cylinders containing this mixture are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.) If leaking or spilled hydrogen and phosphine catches fire, do not extinguish flames. Flammable and toxic vapors may spread from the leak and could explode if reignited by sparks or flames. Explosive atmospheres may linger. Before entering area, especially confined areas, check with an appropriate device. To protect persons from cylinder fragments and toxic fumes should a rupture occur, evacuate the area if the fire cannot be brought under immediate control.

Protective Equipment and Precautions for Firefighters: Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

DANGER! Flammable high-pressure gas.

Personnel Safety Precautions: Immediately evacuate all personnel from danger area. Do not approach area without self-contained breathing apparatus and protective clothing. Gas forms explosive mixtures with air. (See section 5.) Before entering area, especially a confined area, check atmosphere with an appropriate device. Remove all sources of ignition if without risk. Reduce vapors with fog or fine water spray. Shut off flow if without risk. Ventilate area or move cylinder to a well-ventilated area. Prevent runoff from contaminating surrounding environment. Flammable vapors may spread from spill.

Product: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)	SDS No. P-19-6467 April 2013
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Environmental Protection: Prevent waste from contaminating the surrounding environment. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN HANDLING: *Keep away from heat, sparks, and open flame.* Use only spark-proof tools and explosion-proof equipment. *Protect cylinders from damage.* Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. *Hydrogen is the lightest known gas.* It may leak out of systems that are air-tight for other gases and may collect in poorly ventilated upper reaches of buildings. Leak check system with soapy water; never use a flame. *All piped hydrogen systems and associated equipment must be grounded.* Electrical equipment must be non-sparking or explosion-proof. *Do not crack or open hydrogen cylinder valves unless connected to utilization equipment;* escaping gas may ignite spontaneously. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier. Close cylinder valve after each use; keep closed even when empty. *Never attempt to lift a cylinder by its cap;* the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. For other precautions in using hydrogen, see section 16.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Post “No Smoking or Open Flames” signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g., NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure cylinders upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the cylinder is not in use. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods. For other precautions in using this mixture, see section 16.

RECOMMENDED PUBLICATIONS:

For further information on storage, handling, and use see Praxair publication P-14-153, *Guidelines for Handling Gas Cylinders and Containers*. Obtain from your local supplier. For further information specific to hydrogen, see NFPA 50A, *Standard for Gaseous Hydrogen Systems at Consumer Sites*, published by the National Fire Protection Association, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101; 1-800-344-3555; www.nfpa.org.

Product: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)	SDS No. P-19-6467 April 2013
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8. Exposure Controls/Personal Protection

COMPONENT	OSHA PEL	ACGIH TLV (2012)
Phosphine	0.3 ppm TWA	1 ppm–15-minute STEL; 0.3 ppm TWA
Hydrogen	Not established.	Simple asphyxiant

IDLH = Phosphine: 50 ppm

ENGINEERING CONTROLS:

Local Exhaust. An explosion-proof local exhaust system is acceptable. See SPECIAL.

Mechanical (General). Inadequate; see Special.

Special. Use only in a closed system.

Other. See Special.

PERSONAL PROTECTIVE EQUIPMENT:

Skin Protection. Wear work gloves and metatarsal shoes when handling cylinders. Select in accordance with OSHA 29 CFR 1910.132, 1910.136, and 1910.138.

Eye/Face Protection. Wear safety glasses with side shields or safety goggles when handling cylinders. Select eye protection in accordance with OSHA 29 CFR 1910.133.

Respiratory Protection. A respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable) requirements must be followed whenever workplace conditions warrant respirator use. Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure (e.g., an organic vapor cartridge). For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus.

9. Physical and Chemical Properties

APPEARANCE:	Colorless gas
ODOR:	Decaying fish
ODOR THRESHOLD:	Not available.
PHYSICAL STATE:	Gas at normal temperature and pressure
pH:	Not applicable.
MELTING POINT at 1 atm:	Not available.
BOILING POINT at 1 atm:	Not available.
FLASH POINT (test method):	Not available.
EVAPORATION RATE (Butyl Acetate = 1):	Not applicable.
FLAMMABILITY:	Flammable.

Product: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)	SDS No. P-19-6467 April 2013
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9. Physical and Chemical Properties

FLAMMABLE LIMITS IN AIR , % by volume: (based on hydrogen)	LOWER: 4.0%	UPPER: 75.0%
VAPOR PRESSURE at 68°F (20°C):	Not available.	
VAPOR DENSITY at 70°F (21.1°C) and 1 atm:	Not available.	
SPECIFIC GRAVITY (H ₂ O = 1) at 19.4°F (-7°C):	Not available.	
SPECIFIC GRAVITY (Air = 1) at 70°F (21.1°C) and 1 atm:	Not available.	
SOLUBILITY IN WATER , % by wt:	Negligible	
PARTITION COEFFICIENT: n-octanol/water:	Not available.	
AUTOIGNITION TEMPERATURE:	1051°F (566°C) (based on hydrogen)	
DECOMPOSITION TEMPERATURE:	Not available.	
PERCENT VOLATILES BY VOLUME:	100	
MOLECULAR WEIGHT:	Not applicable.	
MOLECULAR FORMULA:	Mixtures of PH ₃ and H ₂	

10. Stability and Reactivity

CHEMICAL STABILITY: Unstable Stable

CONDITIONS TO AVOID: High temperatures; phosphine decomposes at temperatures in excess of 689°F (365°C)

INCOMPATIBLE MATERIALS: Oxidizing agents, especially oxygen and halogens, lithium, acids, and copper.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition or burning may product phosphorus and phosphorus oxides.

POSSIBILITY OF HAZARDOUS REACTIONS: May Occur Will Not Occur

Thermal decomposition or burning releases poisonous substances.

11. Toxicological Information

ACUTE DOSE EFFECTS: Phosphine: 20 ppm, 1 hr, rat. Hydrogen is a simple asphyxiant.

STUDY RESULTS: None known about this mixture.

12. Ecological Information

ECOTOXICITY: No known effects.

OTHER ADVERSE EFFECTS: No adverse ecological effects expected. The components of this mixture do not contain any Class I or Class II ozone-depleting chemicals.

Product: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)	SDS No. P-19-6467 April 2013
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13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

DOT/IMO SHIPPING NAME: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)

HAZARD CLASS: 2.1	PACKING GROUP/Zone: NA*	IDENTIFICATION NUMBER: UN1954	PRODUCT RQ: None
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SHIPPING LABEL(s): FLAMMABLE GAS

PLACARD (when required): FLAMMABLE GAS

*NA = Not applicable.

SPECIAL SHIPPING INFORMATION: Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

Shipment of compressed gas cylinders that have been filled without the owner's consent is a violation of federal law [49 CFR 173.301(e)].

MARINE POLLUTANTS: The components of this mixture are not listed as marine pollutants by DOT.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, state, and local regulations.

U.S. FEDERAL REGULATIONS:

EPA (ENVIRONMENTAL PROTECTION AGENCY)

CERCLA: COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (40 CFR Parts 117 and 302):

Reportable Quantity (RQ): Phosphine: 100 lb (45.4 kg) Hydrogen: None

SARA: SUPERFUND AMENDMENT AND REAUTHORIZATION ACT:

SECTIONS 302/304: Require emergency planning based on Threshold Planning Quantity (TPQ) and release reporting based on Reportable Quantities (RQ) of Extremely Hazardous Substances (EHS) (40 CFR Part 355):

TPQ: Phosphine: 500 lb (226.8 kg) Hydrogen: None

EHS RQ (40 CFR 355): Phosphine: 100 lb (45.4 kg) Hydrogen: None

Product: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)	SDS No. P-19-6467 April 2013
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SECTIONS 311/312: Require submission of MSDSs and reporting of chemical inventories with identification of EPA hazard categories. The hazard categories for this product are as follows:

IMMEDIATE: No

PRESSURE: Yes

DELAYED: No

REACTIVITY: No

FIRE: Yes

SECTION 313: Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

Phosphine and mixtures containing it are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR 372. Hydrogen is not subject to reporting under Section 313.

40 CFR 68: RISK MANAGEMENT PROGRAM FOR CHEMICAL ACCIDENTAL RELEASE PREVENTION: Requires development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

Phosphine is listed as a regulated substance in quantities of 5000 lb (2268 kg) or greater. Hydrogen is listed as a regulated substance in quantities of 10,000 lb (4536 kg) or greater.

TSCA: TOXIC SUBSTANCES CONTROL ACT: The components of this mixture are listed on the TSCA inventory.

OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:

29 CFR 1910.119: PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS: Requires facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals.

Phosphine is listed in Appendix A as a highly hazardous chemical in quantities of 100 lb (45.4 kg) or greater. Hydrogen is not listed in Appendix A as a highly hazardous chemical. However, any process that involves a flammable gas on site in one location in quantities of 10,000 lb (4536 kg) or greater is covered under this regulation unless the gas is used as a fuel.

STATE REGULATIONS:

CALIFORNIA: None of the components of this mixture are listed by California under the SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (Proposition 65).

PENNSYLVANIA: The components of this mixture are subject to the PENNSYLVANIA WORKER AND COMMUNITY RIGHT-TO-KNOW ACT (35 P.S. Sections 7301-7320).

16. Other Information

Read and understand all labels and instructions supplied with all containers of this product.

Product: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)	SDS No. P-19-6467 April 2013
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OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE: *High-pressure gas.* Use piping and equipment adequately designed to withstand pressures to be encountered. Use a backflow prevention device in any piping. Store and use with adequate ventilation at all times. Use only in a closed system constructed of corrosion-resistant materials and scrupulously kept dry. Purge system with a dry, inert gas before and after use. Prevent reverse flow. Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. Never work on a pressurized system. If there is a leak, close the cylinder valve. Blow the system down in an environmentally safe manner in compliance with all federal, state, and local laws, and then repair the leak. Follow safe practices when returning cylinder to supplier. Ensure that the valve is closed, and then install valve outlet cap or plug, leak-tight. Never place a compressed gas cylinder where it may become part of an electrical circuit.

Mixtures. When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Chemicals have properties that can cause serious injury or death.

HAZARD RATING SYSTEMS:

NFPA RATINGS:

HEALTH = 0
FLAMMABILITY = 4
INSTABILITY = 0
SPECIAL = None

HMIS RATINGS:

HEALTH = 1
FLAMMABILITY = 4
PHYSICAL HAZARD = 3

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED: CGA-350
PIN-INDEXED YOKE: Not applicable.
ULTRA-HIGH-INTEGRITY CONNECTION: Not applicable.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information can be found in the following materials published by the Compressed Gas Association, Inc. (CGA), www.cganet.com.

- AV-1 *Safe Handling and Storage of Compressed Gases*
- P-1 *Safe Handling of Compressed Gases in Containers*
- SB-2 *Oxygen-Deficient Atmospheres*
- V-1 *Compressed Gas Cylinder Valve Inlet and Outlet Connections*
- V-7 *Standard Method for Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures*
- *Handbook of Compressed Gases*

Last revised 3 Apr 2013.

Praxair Material Safety Data Sheet

Product: Compressed gas, flammable n.o.s. (1-499 ppm phosphine, balance hydrogen)	SDS No. P-19-6467 April 2013
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Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair MSDSs are furnished on sale or delivery by Praxair or the independent distributors and suppliers who package and sell our products. To obtain current MSDSs for these products, contact your Praxair sales representative or local distributor or supplier. If you have questions regarding Praxair MSDSs, would like the form number and date of the latest MSDS, or would like the names of the Praxair suppliers in your area, phone or write the Praxair Call Center (**Phone:** 1-800-PRAXAIR; **Address:** Praxair Call Center, Praxair, Inc., PO Box 44, Tonawanda, NY 14151-0044).

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Praxair, Inc.
39 Old Ridgebury Road
Danbury, CT 06810-5113

P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do not induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor/physician.
P363	Wash contaminated clothing before reuse.
P370+P378	In case of fire: Use water spray, dry chemical or carbon dioxide to extinguish.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local regulations.

Potential Health Effects

Eyes	Causes severe eye burns.
Inhalation	May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Skin	May be harmful if absorbed through skin. Causes skin burns.
Ingestion	May be harmful if swallowed.

NFPA Ratings

Health	3
Flammability	0
Reactivity	2
Specific hazard	OX

HMIS Ratings

Health	3
Fire	0
Reactivity	2
Personal	Not Available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Weight %	CAS #	EINECS# / ELINCS#	Formula	Molecular Weight
Nitric Acid	67-70	7697-37-2	231-714-2	HNO ₃	63.01 g/mol
Water	Balance	7732-18-5	231-791-2	H ₂ O	18.00 g/mol

4. FIRST-AID MEASURES

Eyes	Rinse with plenty of water for at least 15 minutes and seek medical attention immediately.
Inhalation	Move casualty to fresh air and keep at rest. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention immediately.
Skin	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and wash using soap. Get medical attention immediately.
Ingestion	Do Not Induce Vomiting! Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media	Product is not flammable. Use appropriate media for adjacent fire. Cool containers with water.
Special protective equipment and precautions for firefighters	Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots.

Specific hazards arising from the chemical	Emits toxic fumes (nitrogen oxides) under fire conditions. (See also Stability and Reactivity section).
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6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	See section 8 for recommendations on the use of personal protective equipment.
Environmental precautions	Prevent spillage from entering drains. Any release to the environment may be subject to federal/national or local reporting requirements.
Methods and materials for containment and cleaning up	Neutralize spill with sodium bicarbonate or lime. Absorb spill with noncombustible absorbent material, then place in a suitable container for disposal. Clean surfaces thoroughly with water to remove residual contamination. Dispose of all waste and cleanup materials in accordance with regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

See section 8 for recommendations on the use of personal protective equipment. Use with adequate ventilation. Wash thoroughly after using. Keep container closed when not in use. Avoid formation of aerosols.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area. Keep away from incompatible materials (see section 10 for incompatibilities).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure controls:

Component	Exposure Limits	Basis	Entity
Nitric Acid	2 ppm 5.2 mg/m ³	TLV	ACGIH
	4 ppm 10 mg/m ³	STEL	ACGIH
	2 ppm 5 mg/m ³	PEL	OSHA
	2 ppm 5 mg/m ³	REL	NIOSH
	4 ppm 10 mg/m ³	STEL	NIOSH
	25 ppm	IDLH	NIOSH

TWA: Time Weighted Average over 8 hours of work.

TLV: Threshold Limit Value over 8 hours of work.

REL: Recommended Exposure Limit

PEL: Permissible Exposure Limit

STEL: Short Term Exposure Limit during x minutes.

IDLH: Immediately Dangerous to Life or Health

WEEL: Workplace Environmental Exposure Levels

CEIL: Ceiling

Personal Protection

Eyes	Wear chemical safety glasses or goggles, and face shield.
Inhalation	Provide local exhaust, preferably mechanical. If exposure levels are excessive, use an approved respirator.

Skin	Wear nitrile or rubber gloves, and full body covering. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Other	Not Available

Other Recommendations

Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.)	Colorless liquid.
Odor	Not Available
Odor threshold	Not Available
pH	<1 at 20°C (68°F)
Melting point/freezing point	Not Available
Initial boiling point and boiling range	120.5°C (248.9°F)
Flash point	Not Flammable
Evaporation rate	Not Available
Flammability (solid, gas)	Not Flammable
Upper/lower flammability or explosive limit	Not Explosive
Vapor pressure	11 hPa (8 mmHg) at 20°C (68°F)
Vapor density	2.3 (air=1)
Specific gravity	1.42
Solubility (ies)	Soluble in water.
Partition coefficient: n-octanol/water	Not Available
Auto-ignition temperature	Not Available
Decomposition temperature	Not Available

10. STABILITY AND REACTIVITY

Chemical Stability	Stable
Possibility of Hazardous Reactions	Will not occur.
Conditions to Avoid	May discolor on exposure to air and light.
Incompatible Materials	Alkali metals, organic materials, acetic anhydride, acetonitrile, alcohols, acrylonitrile.
Hazardous Decomposition Products	Nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Skin	Not Available
Eyes	Not Available
Respiratory	Not Available
Ingestion	LDLO Oral – Human – 430 mg/kg

Carcinogenicity

IARC	No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH	No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP	No components of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA	No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
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Signs & Symptoms of Exposure

Skin	Itching, swelling, redness, burning.
Eyes	Itching, redness, burning, watering eyes.
Respiratory	Burning, choking, shortness of breath, coughing, wheezing, dizziness.
Ingestion	Burning, choking, nausea, vomiting, severe pain.

Chronic Toxicity	Not Available
Teratogenicity	Tetotoxicity (except death)
Mutagenicity	Not Available
Embryotoxicity	Tetotoxicity (except death)
Specific Target Organ Toxicity	Not Available
Reproductive Toxicity	Not Available
Respiratory/Skin Sensitization	Not Available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Aquatic Vertebrate	LC50 – Gambusia affinis – 72 mg/L – 96h
Aquatic Invertebrate	Not Available
Terrestrial	Not Available

Persistence and Degradability	Not Available
Bioaccumulative Potential	Not Available
Mobility in Soil	Not Available
PBT and vPvB Assessment	Not Available
Other Adverse Effects	Not Available

13. DISPOSAL CONSIDERATIONS

Waste Product or Residues	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product or residue.
Product Containers	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product container.

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods.

14. TRANSPORTATION INFORMATION

US DOT	UN2031, Nitric acid, 8, (5.1), pg II
TDG	UN2031, NITRIC ACID, 8, (5.1), PG II
IMDG	UN2031, NITRIC ACID, 8, (5.1), PG II
Marine Pollutant	No
IATA/ICAO	UN2031, Nitric acid, 8, (5.1), pg II

15. REGULATORY INFORMATION

TSCA Inventory Status	All ingredients are listed on the TSCA inventory.
DSCL (EEC)	All ingredients are listed on the DSCL inventory.
California Proposition 65	Not Listed
SARA 302	Listed: Nitric Acid
SARA 304	Listed: Nitric Acid
SARA 311	Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard
SARA 312	Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard
SARA 313	Listed: Nitric Acid
WHMIS Canada	Class C: Oxidizing material Class E: Corrosive material

16. OTHER INFORMATION

Revision	Date
Revision 1	12/04/2012
Revision 2	08/07/2013
Revision 3	01/20/2015
Revision 4	01/02/2017

Disclaimer: The information provided in this Safety Data Sheet ("SDS") is correct to the best of our knowledge, information and belief at the date of publication. The information in this SDS relates only to the specific Product identified under Section 1, and does not relate to its use in combination with other materials or products, or its use as to any particular process. Those handling, storing or using the Product should satisfy themselves that they have current information regarding the particular way the Product is handled, stored or used and that the same is done in accordance with federal, state and local law. WE DO NOT MAKE ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING (WITHOUT LIMITATION) WARRANTIES WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN OR WITH RESPECT TO FITNESS FOR ANY PARTICULAR USE. WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, INJURY, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT.



SAFETY DATA SHEET

1. Identification

Product identifier Hydrofluoric Acid 49%

Other means of identification
Product code -

Recommended use Industrial use.

Recommended restrictions None known.

Manufacturer / Importer / Supplier / Distributor information
Supplier/Manufacturer KMG Electronic Chemicals, Inc.
Address 9555 W. Sam Houston Parkway South
Suite 600
Houston, Texas 77099
Telephone 713-600-3800
Emergency telephone 760-476-3960

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards
Acute toxicity, oral Category 2
Acute toxicity, dermal Category 1
Acute toxicity, inhalation Category 2
Skin corrosion/irritation Category 1A
Specific target organ toxicity, repeated exposure Category 1 (Kidney, Liver, Lung)

OSHA defined hazards Not classified.

Label elements



Signal word Danger

Hazard statement Fatal if swallowed. Fatal in contact with skin. Fatal if inhaled. Causes severe skin burns and eye damage. Causes damage to organs (Kidney, Liver, Lung) through prolonged or repeated exposure.

Precautionary statement

Prevention Do not breathe mist. Do not get in eyes, on skin, or on clothing. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection. Use only outdoors or in a well-ventilated area. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

Response If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If swallowed: Immediately call a poison center/doctor. Do not induce vomiting. Rinse mouth. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Specific treatment is urgent (see this label). Get medical advice/attention if you feel unwell.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) Not classified.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
Hydrofluoric acid		7664-39-3	49

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Following inhalation exposure, a 2.5% calcium gluconate solution can be given by nebulizer. If breathing is difficult, give oxygen. Immediately call a poison control center or doctor for treatment advice. Move person to fresh air. If breathing has ceased, start mouth-to-mouth artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Be aware that symptoms of chemical pneumonia (shortness of breath) may occur several hours after exposure.
Skin contact	Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay. Initiate and maintain gentle and continuous irrigation until the patient receives medical care. If medical care is not promptly available, continue to irrigate for one hour. Cover wound with sterile dressing. A physician should be consulted for all exposures. Burns covering an area greater than fifty-two square centimeters (8 square inches) require immediate treatment by a medical doctor. Remove contaminated clothing. With gloved hand apply 2.5% calcium gluconate gel to the burn area.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. A 1.0 pct calcium gluconate gel solution can be used to irrigate the eye using a syringe or a continuous irrigation device. Get medical attention immediately.
Ingestion	Immediately call a poison control center or doctor for treatment advice. If ingested give milk or calcium gluconate by mouth. Administer several vials of 10% aqueous calcium gluconate orally. (Calcium carbonate or an antacid containing calcium carbonate or magnesium carbonate or hydroxide may also be used.) Do not give anything by mouth to an unconscious person. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs.
Most important symptoms/effects, acute and delayed	Inhalation: May cause damage to mucous membranes in nose, throat, lungs and bronchial system. Eye contact: May cause temporary blindness and severe eye damage. Corrosive. Skin contact: May cause serious chemical burns to the skin. Ingestion: May cause burns in mucous membranes, throat, esophagus and stomach.
Indication of immediate medical attention and special treatment needed	Treatment : This advice is provided to the attending physician because of the specific properties of hydrogen fluoride and hydrofluoric acid. All cases of ingestion and airway exposure, and skin burns with hydrofluoric acid >20% should be regarded as potentially fatal. Patients who have burns and pain within minutes of exposure can be assumed to have been exposed to concentrated acid and are at risk of rapid clinical deterioration and death. Burns can be accompanied by absorption of fluoride through the skin with sequestration of circulating calcium leading to hypocalcemia and hyperkalemia from the release of cell contents. Fatal cardiac dysrhythmias may ensue. A person who has HF burns greater than 25 square inches or who has been burned with concentrated HF should be admitted immediately to an intensive care unit and carefully monitored by EKG for 24 to 48 hours. Blood sampling should be taken to monitor circulating fluoride, potassium and calcium levels. Hemodialysis may be necessary for fluoride removal and correction of hyperkalemia. HF inhaled in high concentrations may cause acute inflammation and edema of the airway and acute pulmonary edema. Anyone who has been exposed to HF gas or mists and experiences respiratory irritation should be admitted to and monitored in an intensive care unit. In some cases, if the eyes are exposed to HF, it may penetrate to internal structures resulting in irreversible damage. HF skin burns are usually accompanied by severe, throbbing pain, which is thought to be due to irritation of nerve endings by increased levels of potassium ions entering the extracellular space to compensate for the reduced levels of calcium ions, which have been bound to the fluoride. RELIEF OF PAIN IS AN IMPORTANT GUIDE TO THE SUCCESS OF TREATMENT.
General information	In case of shortness of breath, give oxygen. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Keep victim warm. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

5. Fire-fighting measures

Suitable extinguishing media	This product is not flammable. Use extinguishing agent suitable for type of surrounding fire.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	By heating and fire, toxic and corrosive vapors/gases may be formed.
Special protective equipment and precautions for firefighters	Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire-fighting equipment/instructions	Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Local authorities should be advised if significant spillages cannot be contained. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas. Use personal protection recommended in Section 8 of the SDS.

Methods and materials for containment and cleaning up

Should not be released into the environment. Stop the flow of material, if this is without risk. Prevent entry into waterways, sewers, basements or confined areas.

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Small Spills: Absorb spill with vermiculite or other inert material. Clean contaminated surface thoroughly. After removal flush contaminated area thoroughly with water.

Never return spills in original containers for re-use.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

7. Handling and storage

Precautions for safe handling

Handle and open container with care. Use only with adequate ventilation. Avoid any exposure. Do not handle or store near an open flame, heat or other sources of ignition. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep this material away from food, drink and animal feed. Use care in handling/storage. Protect from sunlight. Store away from incompatible materials.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Material	Type	Value
Hydrofluoric acid (CAS 7664-39-3)	PEL	2.5 mg/m ³

US. OSHA Table Z-2 (29 CFR 1910.1000)

Material	Type	Value
Hydrofluoric acid (CAS 7664-39-3)	TWA	3 ppm

US. ACGIH Threshold Limit Values

Material	Type	Value
Hydrofluoric acid (CAS 7664-39-3)	Ceiling	2 ppm
	TWA	2.5 mg/m ³ 0.5 ppm

US NIOSH Pocket Guide to Chemical Hazards: Ceiling Limit Value and Time Period (if specified)

Material	Type	Value
Hydrofluoric acid (CAS 7664-39-3)	Ceiling	5 mg/m ³
		6 ppm

US NIOSH Pocket Guide to Chemical Hazards: Recommended exposure limit (REL)

Material	Type	Value
Hydrofluoric acid (CAS 7664-39-3)	TWA	2.5 mg/m ³
		3 ppm

Biological limit values

ACGIH Biological Exposure Indices

Material	Value	Determinant	Specimen	Sampling Time
Hydrofluoric acid (CAS 7664-39-3)	3 mg/l	Fluoride	Urine	*
	2 mg/l	Fluoride	Urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Hydrofluoric acid (CAS 7664-39-3)

Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Hydrofluoric acid (CAS 7664-39-3)

Can be absorbed through the skin.

Appropriate engineering controls

If enclosed handling cannot be guaranteed, ventilation and protective clothing must be used. Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear approved safety glasses or goggles.

Skin protection

Hand protection

Wear protective gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.

Other

Wear appropriate chemical resistant clothing.

Respiratory protection

In case of inadequate ventilation use suitable respirator. Wear approved respiratory protection when working with this material unless ventilation or other engineering controls are adequate to keep airborne concentrations below recommended exposure standards. Follow respirator protection program requirements (OSHA 1910.134 or CSA-Z94.4-02(R2008), and ANSI / AIHA Z88.6) for all respirator use.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Remove and isolate contaminated clothing and shoes. Handle in accordance with good industrial hygiene and safety practice. Launder contaminated clothing before reuse.

9. Physical and chemical properties

Appearance

Colorless liquid.

Physical state

Liquid.

Form

Liquid.

Color

Colorless.

Odor

Pungent.

Odor threshold

Not available.

pH

Acidic

Melting point/freezing point

-118.35 °F (-83.53 °C)

Initial boiling point and boiling range

Not available.

226.4 °F (108 °C)

Flash point

Not available.

Evaporation rate

Not available.

Flammability (solid, gas)

Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)

Not available.

Flammability limit - upper (%)

Not available.

Explosive limit - lower (%)

Not available.

Explosive limit - upper (%)

Not available.

Vapor density

0.7 (air=1)

Relative density

Not available.

Solubility(ies)

Not available.

Completely soluble

Partition coefficient (n-octanol/water)

No data available.

Auto-ignition temperature

Not available.

Decomposition temperature

Not available.

Viscosity

Not available.

Other information

Density	1.15
Molecular formula	HF
Molecular weight	20.01 g/mol

10. Stability and reactivity

Reactivity	Reacts violently with strong bases. Strong alkalis. Strong bases. Sulfides. Cyanides.
Chemical stability	Stable under normal temperature conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Heat, flames and sparks.
Incompatible materials	Strong alkalis. Metals. Strong oxidizing agents. Strong bases. Sulfides. Cyanides.
Hazardous decomposition products	Hydrogen fluoride. Toxic fluorides. Gives off hydrogen by reaction with metals

11. Toxicological information

Information on likely routes of exposure

Ingestion	Fatal if swallowed. Causes digestive tract burns.
Inhalation	Fatal if inhaled. Causes respiratory tract burns.
Skin contact	Fatal in contact with skin. Causes severe skin burns. Causes permanent skin damage (scarring).
Eye contact	Causes severe eye burns. May cause blindness.

Symptoms related to the physical, chemical and toxicological characteristics	Inhalation: May cause damage to mucous membranes in nose, throat, lungs and bronchial system. Be aware that symptoms of lung edema (shortness of breath) may develop up to 24 hours after exposure. Eye contact: Corrosive. Prolonged contact causes serious eye and tissue damage. May cause blindness. Skin contact: May cause serious chemical burns to the skin. Ingestion: May cause burns in mucous membranes, throat, esophagus and stomach.
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Information on toxicological effects

Acute toxicity	Fatal if swallowed. Fatal in contact with skin. Fatal if inhaled.
Skin corrosion/irritation	Causes severe skin burns.
Serious eye damage/eye irritation	Causes severe eye burns.
Respiratory sensitization	No data available.
Skin sensitization	Not a skin sensitizer.
Germ cell mutagenicity	No data available.
Carcinogenicity	Not classified.

IARC Monographs. Overall Evaluation of Carcinogenicity

Hydrofluoric acid (CAS 7664-39-3) 3 Not classifiable as to carcinogenicity to humans.

Reproductive toxicity	No data available.
Specific target organ toxicity - single exposure	No data available.
Specific target organ toxicity - repeated exposure	May cause damage to the following organs through prolonged or repeated exposure: Liver. Kidney. Lung.
Aspiration hazard	Not classified.
Chronic effects	Can cause cardiovascular effects. May cause damage to the liver and kidneys.
Further information	Can cause cardiovascular effects. May cause damage to the liver and kidneys. May cause lung edema. Symptoms may be delayed.

12. Ecological information

Ecotoxicity	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	No data available.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Mobility in general	The product is water soluble and may spread in water systems.
Other adverse effects	Not established. The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

13. Disposal considerations

Disposal instructions	Dispose of this material and its container at hazardous or special waste collection point. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.
Local disposal regulations	Dispose of in accordance with local regulations.
Hazardous waste code	U134: Waste Hydrofluoric Acid
US RCRA Hazardous Waste U List: Reference	
Hydrofluoric acid (CAS 7664-39-3)	U134
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Dispose of in accordance with local regulations.

14. Transport information

DOT

UN number	UN1790
UN proper shipping name	Hydrofluoric acid, with not more than 60 percent strength
Transport hazard class(es)	8
Subsidiary class(es)	6.1
Packing group	II
Special precautions for user	Not available.
Special provisions	A6, A7, B15, IB2, N5, N34, T8, TP2, TP12
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	243
ERG number	157

IATA

UN number	UN1790
UN proper shipping name	Hydrofluoric acid 60% or less strength
Transport hazard class(es)	8
Subsidiary class(es)	6.1
Packaging group	II
Environmental hazards	No
Labels required	Not available.
ERG Code	8P
Special precautions for user	Not available.

IMDG

UN number	UN1790
UN proper shipping name	HYDROFLUORIC ACID solution, with not more than 60% hydrogen flouride
Transport hazard class(es)	8
Subsidiary class(es)	6.1
Packaging group	II
Environmental hazards	
Marine pollutant	No
Labels required	Not available.
EmS	F-A, S-B
Special precautions for user	Not available.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code This substance/mixture is not intended to be transported in bulk.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Hydrofluoric acid (CAS 7664-39-3) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance Yes

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Hydrofluoric acid	7664-39-3	49

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Hydrofluoric acid (CAS 7664-39-3)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Hydrofluoric acid (CAS 7664-39-3)

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130) Hazardous substance

Safe Drinking Water Act (SDWA) 4.0 mg/l
4.0 mg/l

Food and Drug Administration (FDA) Not regulated.

US state regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

Hydrofluoric acid (CAS 7664-39-3)

US. New Jersey Worker and Community Right-to-Know Act

Hydrofluoric acid (CAS 7664-39-3) 100 lbs

US. Pennsylvania RTK - Hazardous Substances

Hydrofluoric acid (CAS 7664-39-3)

US. Rhode Island RTK

Hydrofluoric acid (CAS 7664-39-3)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 21-September-2013

Revision date -

Version #

01

NFPA Ratings



Disclaimer

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

**Startup, Shutdown, Maintenance, and Malfunction
Plan**



**SUMCO PHOENIX CORPORATION
STARTUP, SHUTDOWN, MAINTENANCE, AND
MALFUNCTION PLAN**

Albuquerque Facility

Revision 0
May 2021

1. INTRODUCTION

This Startup, Shutdown, Maintenance, and Malfunction (SSM/M) plan provides an operational and maintenance strategy for the permitted sources of emissions at the SUMCO Phoenix Corporation – Albuquerque Facility (SUMCO).

This plan addresses the operational strategy if a malfunction occurs that may cause an exceedance of the permitted emission unit of a regulated air contaminant, as well as the anticipated nature of emission during routine startup or shutdown of each source and the steps SUMCO will take to minimize emissions during routine startup or shutdown.

The following definitions from 20.11.41.7 NMAC apply to this SSM/M plan:

“Malfunction” means any sudden, infrequent and not reasonably preventable failure of air pollution control equipment or process equipment, or the failure of a process to operate in a normal or expected manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

“Shutdown” means the cessation of operation of any air pollution control equipment, process equipment or process for any purpose, except routine phasing out of batch process units.

“Startup” means to put a stationary source that has been constructed or modified as authorized by a permit issued pursuant to 20.11.41 NMAC into operation complete with functional air pollution controls, so the process equipment or the process performs for the purpose intended. The operation may be cyclic in response to on-off controls. Repetition of cycles is not startup for purposes of 20.11.41 NMAC.

Note that all the procedures contained herein may be superseded (and thereby fulfilled by) by other NSR and NSPS requirements.

2. MALFUNCTION PROCEDURE

The following procedures will be taken in the event of a malfunction event that may cause an exceedance of the permitted emission limit of a regulated air contaminant:

- ▶ SUMCO will note an emissions issue by observing the soot coming out of the stacks.
- ▶ The unit will be taken offline for repairs upon the observation of abnormal soot coming out of the stacks.
- ▶ The maintenance technician will perform the repairs or adjustments and bring the unit back online. If the work is beyond SUMCO's capability then the work will be contracted out to an outside contractor.
- ▶ All work completed will be documented in the SUMCO's Service Request System.
- ▶ SUMCO will calculate the emissions of regulated air contaminants from the malfunction event to determine if there has been an exceedance of a permitted emission limit.
- ▶ SUMCO will report excess emissions to the City of Albuquerque Environmental Health Department as necessary.

3. EMERGENCY GENERATOR STARTUP, SHUTDOWN, AND MAINTENANCE

3.1 EMERGENCY GENERATOR STARTUP PROCEDURE

A startup event for a Reciprocating Internal Combustion Engine (RICE) occurs when the unit is initially operated after being off.

SUMCO carefully monitors the entire startup process to ensure safety and minimize airborne emissions. The following actions included in the startup SOP are critical for minimizing emissions during startup:

- ▶ Minimizing cold engine startups. SUMCO ensures warm engine startup by ensuring engine block heaters are online. These units are checked on a weekly basis.
- ▶ Ensuring the engine is achieving good combustion.
- ▶ Monitoring the opacity and color of the exhaust gasses and taking the unit offline for repairs upon the observation of abnormal soot coming out of the stacks.

3.2 EMERGENCY GENERATOR SHUTDOWN PROCEDURE

A shutdown event for a RICE occurs when the unit is shut down after a period of operation.

SUMCO carefully monitors the entire shutdown process to ensure safety and minimize airborne emissions. The following actions included in the shutdown SOP are critical for minimizing emissions during engine shutdown:

Removing the full electrical load from the system and initiating a cool down cycle before the engine is stopped.

Monitoring the opacity and color of the exhaust gasses and taking the unit offline for repairs upon the observation of abnormal soot coming out of the stacks.

3.3 EMERGENCY GENERATOR MAINTENANCE

SUMCO ensures the emergency generator RICE are appropriately maintained according to the manufacturer's recommendations.

SUMCO carefully monitors the engines to ensure safety and minimize airborne emissions during regularly scheduled maintenance events. The following actions included in the maintenance SOP are critical for minimizing emissions during the event:

- ▶ Ensure the engine is achieving good combustion during the maintenance activity;
- ▶ Monitoring the opacity and color of the exhaust gasses and taking the unit offline for repairs upon the observation of abnormal soot coming out of the stacks.

4. BOILER & HUMIDIFIER STARTUP, SHUTDOWN, AND MAINTENANCE

SUMCO operates and maintains the boilers and humidifiers per the manufacturer's recommended guidance. SUMCO ensures that preventive maintenance is completed on each boilers and humidifiers once per year. Specific information is attached detailing boiler operation and maintenance procedures.

5. COOLING TOWER START-UP, SHUTDOWN, AND MAINTENANCE

A cooling tower start-up, shutdown, and maintenance checklist is attached which is based on manufacturer recommendations.

Boiler Operation and Maintenance Procedures

9.7.1.3. Left click on the "Boiler" button.

9.7.1.4. The "Boiler Plant" screen has a line that says "LeadBoiler", followed by a 1 or 2 to denote which boiler is in the lead position. There is also a red button that says "Swap Lead".

9.7.1.5. Place the arrow on the "Swap Lead" button at left click once.

9.7.1.6. Verify on the Boiler Plant screen that the "Lead Boiler" numeral changes.

9.7.1.7. After the "LeadBoiler" screen changes, proceed to the boiler room to verify the boilers have rotated.

9.7.1.8. The boilers will continue to be in a Lead/Lag position with a redundant boiler.

10. Shutdown

10.1. See Figure 1 in Section 13 for the boilers hot water valve schematic.

10.2. Under normal operating conditions, valve No.'s 1 through 6 are normally open (NO). Valve No.'s 7 and 8 are normally closed (NC).

10.3. Prior to valve isolating a boiler from the hot water loop, the boiler must have been in the Lag position for at least 72 hours. This time will allow the boiler to cool to approximately the hot water loop temperature (160-200 F), and prevent the trapped water inside the boiler from boiling and venting once the boiler is isolated.

10.4. To valve isolate Boiler-1

10.4.1. Close V2

10.4.2. Close V3

10.4.3. Close V4

10.4.4. Open V8

10.5. To valve isolate Boiler-2

10.5.1. Close V4

10.5.2. Close V5

10.5.3. Close V6

10.5.4. Open V7

10.6. There is only one electrical power source for each boiler. Opening the electrical disconnect will kill 480V, 3 phase power and to kill the 110V control power the fuse needs to be pulled, which is located in a 4 SQ-Box just left of the transformer next to the main disconnects. The main electrical disconnect for Boiler-1 is on the West wall. The main electrical disconnect for Boiler-2 is on the North wall.

11. Maintenance

11.1. The PM program is scheduled/tracked through our Computerized Maintenance Management System.

11.2. Daily PM (DPM) Program: Use ABQ_FAC_FORM-0020, Daily Facilities Checklist to record all data.

Boiler Operation and Maintenance Procedures

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11.2.1. Complete the DPM per ABQ_FAC_FORM-0020.

11.3. Monthly PM (MPM) Program: Use ABQ_FAC_FORM-0012 to record all data.

11.3.1. Complete the DPM per ABQ_FAC_FORM-0020.

11.3.2. Record the Lead boiler before starting PM.

11.3.3.

11.3.4. To Test the low water cut off switch on Boiler-1.

11.3.4.1. The low water cut off switch is located in front of boiler -1 up above. The test box is labeled SAFGARD low water cut off.

11.3.4.2. To test the low water cut off switch press the test rocker switch at the bottom of the box. The blower on the boiler should turn off. When the rocker switch is released the boiler should resume to normal operations..

11.3.5. To test the low water cut off switch on Boiler-2.

11.3.5.1. The low water cut off switch is located in front of boiler -2 up above. The test box is labeled SAFGARD low water cut off.

11.3.5.2. To test the low water cut off switch press the test rocker switch at the bottom of the box. The blower on the boiler should turn off. When the rocker switch is released the boiler should resume to normal operations.

11.3.6. Test the flame scanner on the operating boiler.

11.3.6.1. With the boiler running and the flame on, unscrew the scanner where it connects to the blast tube. The flame should go out and the audio alarm on the boiler control panel should go off. The boiler will go into a post purge cycle and shut down.

11.3.6.2. Wipe the inside of the scanner clean using a soft, dry cloth.

11.3.6.3. Install the scanner back into the blast tube and hand-tighten. Do not over tighten.

11.3.6.4. To reset B-1 Press and hold then release the "Reset" button located on the bottom of the Fireye controller (BLL510), which is located behind the front control panel, left hand side.

11.3.6.5. To reset B-2 Press and hold then release the "Reset" button located on the bottom of the Fireye controller (BLL510), which is located behind the front control panel, left hand side.

11.3.7. Record the flame signal strength indicated on the Honeywell control module.

11.3.8. During the MPM, the boilers must be rotated so that the Lead boiler before the PM becomes the Lag boiler after the PM. Each boiler must spend one month as the Lead boiler, followed by one month as the Lag boiler. When rotation is complete and the boiler has cycled two times continue MPM on new lead boiler.

11.3.8.1.1.1. To test the low water cut off switch on Boiler-1.

11.3.8.1.1.2. The low water cut off switch is located in front of boiler-2 up above. The test box is labeled SAFGARD low water cut off.

11.3.8.1.1.3. To test the low water cut off switch press the test rocker switch at the bottom of the box. The blower on the boiler should turn off. When the rocker switch is released the boiler should resume to normal operations.

Boiler Operation and Maintenance Procedures

- =====
- 11.3.8.1.1.4. To test the low water cut off switch on Boiler-2.
 - 11.3.8.1.1.5. The low water cut off switch is located in front of boiler -2 up above. The test box is labeled SAFGARD low water cut off.
 - 11.3.8.1.1.6. To test the low water cut off switch press the test rocker switch at the bottom of the box. The blower on the boiler should turn off. When the rocker switch is released the boiler should resume to normal operations.
 - 11.3.9. Test the flame scanner on the new Lead Boiler.
 - 11.3.9.1. With the boiler running and the flame on, unscrew the scanner where it connects to the blast tube. The flame should go out and the audio alarm on the boiler control panel should go off. The boiler will go into a post purge cycle and shut down.
 - 11.3.9.2. Wipe the inside of the scanner clean using a soft, dry cloth.
 - 11.3.9.3. Install the scanner back into the blast tube and hand- tighten. Do not over tighten.
 - 11.3.9.4. To reset B-1 Press and hold then release the "Reset" button located on the bottom of the Fireye controller (BLL510), which is located behind the front control panel, left hand side.
 - 11.3.9.5. To reset B-2 Press and hold then release the "Reset" button located on the bottom of the Fireye controller (BLL510), which is located behind the front control panel, left hand side.
 - 11.3.10. Record the flame signal strength indicated on the Honeywell control module.
 - 11.4. Quarterly PM (QPM) Program: Use ABQ_FAC_FORM-0012 to record all data.
 - 11.4.1. Complete MPM program on the currently operating boiler and then continue with the QPM on the operating boiler.
 - 11.4.2. Test the low gas pressure switch.
 - 11.4.2.1. With the boiler running, close the main gas valve. The flame will go out and the boiler will go into post purge and shut down.
 - 11.4.2.2. For Boiler-1, open the valve, wait one minute for the timer to reset and press the reset button on the fireye controller (BLL510) To reset B-1 Press and hold then release the "Reset" button located on the bottom of the Fireye controller (BLL510), which is located behind the front control panel, left hand side..
 - 11.4.2.3. For Boiler-2, open the valve, wait one minute for the timer to reset and press the reset button on the fireye controller (BLL510) To reset B-2 Press and hold then release the "Reset" button located on the bottom of the Fireye controller (BLL510), which is located behind the front control panel, left hand side.
 - 11.4.3. Complete a leak check on the gas train.
 - 11.4.3.1. With the main gas valve open, apply leak detection soap to the joints on the gas piping and look for bubbles. Continue checking all joints on the main gas line and the pilot gas line.
 - 11.4.3.2. Report any leaks to the Facility Manager.
 - 11.4.3.3. Wipe off leak detection soap when finished from the piping and the floor.
 - 11.4.4. Inspect the city inspection sticker on the side of the boiler for the expiration date. The inspection sticker is good for two years. If the sticker is set to expire, notify the Facility

Boiler Operation and Maintenance Procedures

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Engineer or Maintenance Planner so that the inspector can be scheduled.

11.4.5. The boilers must be rotated so that the Lead boiler before the PM become s the Lag boiler after the PM. Each boiler must spend one month as the Lead boiler, followed b y one month as the Lag boiler. When rotation is complete and boiler has cycled two times continue QPM on new lead boiler. Complete MPM program on the currently operating boiler and then continue with the QPM on the operating boiler.

11.4.6. Test the low gas pressure switch.

11.4.6.1. With the boiler running, close the main gas valve. The flame will go out and the boiler will go into post purge and shut down.

11.4.6.2. For Boiler-1, open the valve, wait one minute for the timer to reset and press the reset button on the fireye controller (BLL510) To reset B-1 Press and hold then release the "Reset" button located on the bottom of the Fireye controller (BLL510), which is located behind the front control panel, left hand side.

11.4.6.3. For Boiler-2, open the valve, wait one minute for the timer to reset and press the reset button on the fireye controller (BLL510) To reset B-2 Press and hold then release the "Reset" button located on the bottom of the Fireye controller (BLL510), which is located behind the front control panel, left hand side.

11.4.7. Complete a leak check on the gas train.

11.4.7.1. With the main gas valve open, apply leak detection soap to the joints on the gas piping and look for bubbles. Continue checking all joints on the main gas line and the pilot gas line.

11.4.7.2. Report any leaks to the Facility Engineer.

11.4.7.3. Wipe off leak detection soap when finished from the piping and the floor.

11.4.8. Inspect the city inspection sticker on the side of the boiler for the expiration date. The inspection sticker is good for two years. If the sticker is set to expire, notify the Facility Engineer or Maintenance Planner so that the inspector can be scheduled.

11.4.9 Test the pressure relief valves on both boilers.

11.4.9.1 The pressure relief valves (PRV's) are located on the top of the boilers. There are two PRV's for boiler-1 and one PRV for boiler 2.

11.4.9.2 Lift the silver handle on top of the PRV. Verify that water is discharging from the pipe that runs to the floor drain. Hold the valve open for at least 5 seconds to allow any debris on the seat to be flushed out.

11.4.9.3 Release the handle. Insure that water stops flowing and the PRV is not weeping. If the PRV is weeping, open and close the PRV again in an attempt to dislodge any debris that may be preventing the PRV from seating correctly.

11.4.10 Complete the QPM program on both boilers including the rotation of lead and lag.

11.5. Annual PM (APM) Program: Use ABQ_FAC_FORM-0012 to record all data.

11.5.1. Contact the Facility Maintenance planner and schedule the boilers for emissions testing. The testing must include data on low fire, mid fire and high fire. The following operating parameters must also be included:

11.5.1.1. Date and time

11.5.1.2. Stack temperature

Boiler Operation and Maintenance Procedures

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11.5.1.3. Percent oxygen

11.5.1.4. Percent excess air

11.5.1.5. Percent carbon dioxide

11.5.1.6. PPM carbon monoxide

11.5.1.7. PPM NOx

11.5.1.8. Percent efficiency

12. Records

12.1. N/A

13. Supplemental Information/Attachment

13.1. The primary Boiler service contractor is Big J&M. 505-328-7574.

CT -1 / 3 / 5 QPM and APM Checklist

Work Order #: _____ PM Date: _____


RCM Tech: _____ Circle all that apply: QPM APM CT-1 CT-3 CT-5

Type of Service	QPM	APM
Inspect general condition of tower		
Clean Debris from Unit		
Check and Adjust Sump Water Level		
Remove Hot Deck Covers and Inspect Nozzles		
Check and Adjust Fan Belt Tension		
Check Operation of Make-Up Valve		
Check Unit for Unusual Noise or Vibration		
Grease Condenser Water Pump and Motor (circle one CWP-1 / CWP-2 / CWP-3 / CWP-4)		
Lubricate Fan Shaft Bearings		
Lubricate Fan Motor Bearings		
Lubricate Motor Base Adjusting Mechanism		
Check Sump Heaters (1 st QPM and 2 nd APM visits)		
Check Motor Voltage and Current		
Clean Hot Deck Sumps and Nozzles		
Clean Media		
Drain and Clean Sump and Strainer		
Replace Fan Belt		

COMMENTS:




Approval Signature _____ Date _____

Tool ID	PM	Description	Due	Complete	WO #
CT-1	1Y	COOLING-TOWER-1 PM	3/12/2021	3/22/2021	5671167
CT-2	1Y	COOLING-TOWER-2 PM	3/12/2021	3/22/2021	5671168
CT-3	1Y	COOLING-TOWER-3 PM	3/12/2021	3/19/2021	5671169
CT-4	1Y	COOLING-TOWER-4 PM	3/12/2021	3/19/2021	5671170
CT-5	1Y	COOLING-TOWER-5 PM	3/12/2021	3/19/2021	5671171


Order 5671167 

Notification | Reference object | Malfunction, breakdown | Location data | Scheduling overview

Reference object


Functional loc.	1200-90-9170-100	COOLING WATER	
Equipment	CT-1	BAC COOLING TOWER-1	
Assembly			

Subject

Coding 

Description COOLING-TOWER-1 PM

03/22/2021 07:23:17 Clovis McKinstry (CMCKINST)
 APM was completed by JCI 3-15-21 see attachment.



Responsibilities

Request for Zonal Certification

Veronica Lui

From: Albrecht, Christopher P. <CALbrecht@cabq.gov>
Sent: Friday, September 16, 2022 1:44 PM
To: Homer, Jeff
Cc: Munoz-Dyer, Carina G.; Adam Erenstein; Neely, Michael; Velazquez, Rafael
Subject: RE: Sumco Permit Modification Follow Up

Mr. Homer,

Thank you very much for providing status of your request from City Albuquerque Zoning (Zoning) for SUMCO's zoning certification. I have also reached out to Zoning to see if there is any way of expediting your request.

We recognize and acknowledge that SUMCO has been at the current location for over 20 years and is properly zoned for your current operations. In the meantime, please submit your permit modification application as soon as possible so we can start processing internally and please note in the application the specific date that you requested this zoning certification from Zoning and the commitment that SUMCO will provide to the Air Quality Program as soon as possible.

Thank you,

Chris



CHRIS ALBRECHT

Associate Director |air quality programs | environmental health department

m 505.350.0090

o 505.768-1965

From: Homer, Jeff <Jeff.Homer@sumcousa.com>
Sent: Tuesday, September 13, 2022 4:46 PM
To: Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Albrecht, Christopher P. <CALbrecht@cabq.gov>
Cc: aerenstein@trinityconsultants.com; Neely, Michael <Michael.Neely@sumcousa.com>; Velazquez, Rafael <Rafael.Velazquez@sumcousa.com>
Subject: RE: Sumco Permit Modification Follow Up

[EXTERNAL] Forward to phishing@cabq.gov and delete if an email causes any concern.

Mr. Albrecht
Ms. Munoz-Dyer



REQUEST FOR ZONAL CERTIFICATION

A zoning certification letter is written confirmation provided by the City of Albuquerque referencing the zoning designation of a particular piece of property, listing certain compliance information, and whether or not the existing development on the property is considered a permitted use.

A completed certification letter includes the assigned address, legal description and zoning designation of the subject site; if applicable, reference to the overlay district, sector plan, development plan, project number and/or pertinent special exceptions (variance, conditional use approvals, etc.), and either a statement confirming zoning compliance or a brief description of any outstanding zoning code violations affecting the site.

A certification letter does not include reference to the zoning designations of abutting or nearby properties; copies of site plans, special exceptions, certificates of occupancy, or other approvals; or reference to building codes, fire codes, subdivision requirements, flood plain standards or similar development prerequisites.

There is a \$200 fee plus a 2% Technology Fee for each separate parcel, even if the property includes multiple contiguous parcels held in single ownership. A minimum processing period of thirty (30) business days from receipt of the completed application and full payment can be expected; but depending upon the related research, necessary site inspections, and similar service demands, some certification letters may take up to 45 business days to complete.

Please return this completed application form and related fee by mail or in person to:

City of Albuquerque – Code Enforcement Division, 600 2nd St. NW, Suite 500, Albuquerque, New Mexico 87102

APPLICATION FOR ZONAL CERTIFICATION

PROPERTY TO BE CERTIFIED

ADDRESS: 9401 SAN MATEO BLVD NE ALBUQUERQUE NM 87114

LOT(S)*: TR D-1C-1A PLAT OF TRS D-1B-1A & D-1C-1A SISTERS OF THE ORDER OF ST DOMINIC CONT 9.8310 AC BLOCK: N/A

SUBDIVISION: Legal Description: TR D-1C-1A PLAT OF TRS D-1B-1A & D-1C-1A SISTERS OF THE ORDER OF ST DOMINIC CONT 9.8310 AC

UNIFORM PROPERTY CODE*: 101706547519010240

There is a \$165 research/administration fee, \$35 application fee and a 2% Technology Fee (\$204 total) for each separate parcel included in the property, even if there are multiple parcels held in single ownership and/or assigned the same UPC number.

APPLICANT

NAME: Michael Neely

COMPANY / ORG.: Sumco Phoenix Corporation

ADDRESS: 9401 SAN MATEO BLVD NE ALBUQUERQUE NM 87114

PHONE: 505-604-0478 EMAIL: Michael.Neely@sumcousa.com

LETTER SHOULD BE ADDRESSED TO: SAME AS APPLICANT

NAME: _____

COMPANY/ORG.: _____

ADDRESS: _____

PHONE: _____ EMAIL: _____

(continued on next page)



APPLICATION FOR ZONAL CERTIFICATION

GENERAL PROPERTY INFORMATION

PROPERTY TYPE (retail, multi-family residential, office, etc.): Non-Residential, Light Manufacturing (NR-LM)

SITE AREA (acres or sq. ft.): 9.831 APPROX. AGE(S) OF EXISTING DEVELOPMENT: ~ 28 years

TOTAL NUMBER OF BUILDINGS: 2

USE FOR EACH BUILDING (e.g., 5 multi-family, 1 office, 2 laundry, 1 garage, etc.): Light manufacturing

The main building (9401 SAN MATEO BLVD on east side of property) is in use, The building to the west on the property was vacated from current operations in 2012.

FOR MULTI-FAMILY RESIDENTIAL DEVELOPMENT: N/A total number of units N/A total number of baths
N/A efficiency units
N/A 1 bedroom units
N/A 2 bedroom units
N/A 3 or more bedroom units

NUMBER OF STORIES (note if basements are present): 9401 San Mateo (2), 5031 San Diego (1)

GROSS FLOOR AREA (if multiple buildings, list for each): 9401 San Mateo (88,195), 5031 San Diego (48,411)

TOTAL NUMBER OF SIGNS (both free-standing and building-mounted): 2, both for 9401 San Mateo, building front and entrance perimeter

TOTAL NUMBER OF PARKING SPACES: 273

263 standard spaces
9 handicap accessible spaces
1 motorcycle spaces

I HEREBY AUTHORIZE CITY CODE ENFORCEMENT STAFF TO INSPECT THE SUBJECT PROPERTY FOR THE PURPOSE OF DETERMINING THE STATUS OF THE EXISTING USE AND RELATED ZONING REQUIREMENTS. FURTHER, I UNDERSTAND THAT ANY AND ALL VIOLATIONS NOTED AS A RESULT OF THIS INSPECTION ARE SUBJECT TO IMMEDIATE CORRECTION.

BY: [Signature] DATE: 09/2/2022
OWNER / AGENT SIGNATURE

OFFICIAL USE ONLY	
ACCEPTED BY: _____	DATE: _____
ZONE: _____	ZAP: _____
ASSIGNED TO: _____	
Technology Fee 2%	
Fee: 441008 - 4919000	\$200
Tech Fee: 445048 - 4910000	\$ 4
Total:	\$204

*Applications are not processed until all fees have been paid.

City of Albuquerque

Reference Number: 2022249001-20
Date/Time: 09/06/2022 4:21:23 PM

DEPARTMENT
DIVISION



Departmental Deposit
2022249001-20-1
Departmental Deposit 1@ \$200.00
GL #: |110|441008|4919000|
Allocation 2 1@ \$4.00
GL #: |110|445048|4910000|
Total: \$204.00

American Express Service Fee
2022249001-20-2
Total: \$5.61

2 ITEMS TOTAL: \$209.61

TOTAL: \$209.61

DUPLICATE RECEIPT 9/6/2022 4:22:48 PM

American Express \$204.00
Method: C
Card Number: *****1007

American Express Service Fee \$5.61
Method: C
Card Number: *****1007
Last Name: false

Total Received: \$209.61



C E 2 0 2 2 2 4 9 0 0 1 - 2 0

Thank you for your payment.

CERTIFICATION

provided by the City of Albuquerque referencing the zoning designation of a particular location, and whether or not the existing development on the property is considered a

ned address, legal description and zoning designation of the subject site; if applicable, lopment plan, project number and/or pertinent special exceptions(variance, conditional nfirming zoning compliance or a brief description of any outstanding zoning code

the zoning designations of abutting or nearby properties; copies of site plans, special pprovals; or reference to building codes, fire codes, subdivision requirements, flood lites.

for each separate parcel, even if the property includes multiple contiguous parcels ng period of thirty (30) business days from receipt of the completed application ending upon the related research, necessary site inspections, and similar service to 45 business days to complete.

d related fee by mail or in person to:
ment Division, 600 2nd St. NW, Suite 500, Albuquerque, New Mexico 87102

ON FOR ZONAL CERTIFICATION

IFIED

D NE ALBUQUERQUE NM 87114

ST DOMINIC CONT 9.8310 AC

BLOCK: N/A

AT OF TRS D-1B-1A & D-1C-1A SISTERS OF THEORDER OF ST DOMINIC CONT 9.8310 AC

6547519010240

5 application fee and a 2% Technology Fee (\$204 total)* for each separate parcel rcel held in single ownership and/or assigned the same UPC number.

x Corporation

BLVD NE ALBUQUERQUE NM 87114

ADDRESS:

PHONE: 505-604-0478

EMAIL: Michael.Neely@sumcousa.com

LETTER SHOULD BE ADDRESSED TO:

SAME AS APPLICANT

NAME:

COMPANY/ORG.:

ADDRESS:

PHONE:

EMAIL:

(continued on next page)



APPLICATION FOR ZONAL CERTIFICATION

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BY: [Signature] DATE: 09/2/2022
OWNER / AGENT SIGNATURE

OFFICIAL USE ONLY	
ACCEPTED BY: <u>G Delgado</u>	DATE: <u>9.6.22</u>
ZONE: <u>NR-LM</u>	ASSIGNED TO: <u>Christina</u>
Technology Fee 2%	
Fee:	441008 - 4919000 \$200
Tech Fee:	445048 - 4910000 \$ 4
Total:	\$204

*Applications are not processed until all fees have been paid.

Modeling Waiver

From: [Lopez, Angela](#)
To: [Adam Erenstein](#); [Albrecht, Christopher P.](#)
Cc: [Homer, Jeff](#); [Velazquez, Rafael](#); [Sabins, Timothy](#)
Subject: Re: SUMCO Modeling Waiver
Date: Thursday, March 2, 2023 8:47:39 AM
Attachments: [image001.png](#)
[SUMCO_0444-M4_Modeling_Review\(4\).pdf](#)

Good Morning Adam,

I apologize for the delay in my response. However, I have great news. Jeff just emailed me and stated that the modeling waiver request for SUMCO is approved. Jeff stated that the modeling conducted under permit #444-M4 for SUMCO included both humidifiers operating simultaneously. Attached is the modeling review dated April 9, 2021 which has been highlighted and states that both humidifiers were modeled as operating simultaneously.

If you have any questions, please don't hesitate to contact me.

cid:image003.png@01D7903D.8EA03DB0



ANGELA LOPEZ

senior environmental health scientist | environmental health department
small business assistance program

o 505.768.1962

cabq.gov/environmentalhealth/

Redline Permit



AIR QUALITY CONSTRUCTION PERMIT
 #0444-M5-1AR
 FACILITY CDS #NM/001/00165
 Facility ID: FA0003801; Record ID: PR0011151



Timothy M. Keller, Mayor

Ángel Martinez Jr., Director

Issued to:	Responsible Official:
Sumco Phoenix Corporation – Albuquerque	Mr. Jeff Homer
9401 San Mateo Boulevard NE	Corporate Director, EHS
Albuquerque, New Mexico 87113	Email: jeff.homer@sumcousa.com

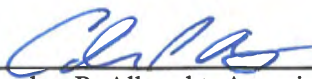
Certified Mail Number:	7017 0530 001 1410 0608 Return Receipt Requested
------------------------	--

Pursuant to the New Mexico Air Quality Control Act, Chapter 74, Article 2 New Mexico Statutes Annotated 1978 (As Amended); the Joint Air Quality Control Board Ordinance, 9-5-1 to 9-5-99 ROA 1994; the Bernalillo County Joint Air Quality Control Board Ordinance, Bernalillo County Ordinance 94-5; the Albuquerque/Bernalillo County Air Quality Control Board (A/BCAQCB) Regulation Title 20, New Mexico Administrative Code (20 NMAC), Chapter 11, Part 40 (20.11.40 NMAC), Air Contaminant Source Registration; and A/BCAQCB Regulation Title 20, NMAC, Chapter 11, Part 41 (20.11.41 NMAC), Construction Permits; **Sumco Phoenix Corporation - Albuquerque** (Company or Permittee) is hereby issued this **CONSTRUCTION PERMIT** and authorized to operate the following equipment at:

Facility / Location	Facility Process Description	NSR classification	SIC	NAICS
Sumco Phoenix Corporation - Albuquerque Facility 9401 San Mateo Boulevard NE Albuquerque, New Mexico 87113	Silicon Wafers Manufacturing	Synthetic Minor	3674	334413

This **CONSTRUCTION** permit number 0444-M5 has been issued based on the review of the application received by the Albuquerque Environmental Health Department (Department), Air Quality Program (Program) on September 21, 2022, ruled complete on October 21, 2022, and on the National Ambient Air Quality Standards, New Mexico Ambient Air Quality Standards, and on the Air Quality Control Regulations for Albuquerque/Bernalillo County, as amended. As these standards and regulations are updated or amended, the applicable changes will be incorporated into permit number 0444-M4 and will apply to the Facility. This permit supersedes all portions of permit number 0444-M5 issued on January 27, 2023.

Issued on the 3rd day of February, 2023



 Christopher P. Albrecht, Associate Director
 Air Quality Programs
 Environmental Health Department
 City of Albuquerque

Table of Contents

I. CONDITIONS	3
1. Construction and Operation	3
2. Unit Emission Limits	7
3. Monitoring	10
4. Recordkeeping	11
5. Reporting.....	12
6. Compliance Tests.....	14
7. Modifications	15
8. Administrative and Technical Revisions	15
9. Compliance Assurance/ Enforcement.....	15
10. Posting of the Permit.....	16
11. Annual Fees	17
II. ADDITIONAL REQUIREMENTS	18
1. Permit Cancellation.....	18
2. Contact Information	18

I. CONDITIONS

Conditions have been imposed in this permit to assure continued compliance. 20.11.41.19.D NMAC, states that any term or condition imposed by the Department on a permit or permit modification is enforceable to the same extent as a regulation of the Board. Pursuant to 20.11.41 NMAC, the facility is subject to the following conditions:

1. Construction and Operation

Compliance will be based on Department inspections of the Facility, reviews of production records, submission of appropriate permit applications for modification, and timely notification to the Department regarding equipment substitutions and relocations.

A. This permit modification authorizes the following:

- 1) Increases anhydrous hydrogen chloride chemical usage from 122,385 lb/year to 225,000 lb/year.
- 2) Administratively corrects all permit restrictions, recordkeeping, and monitoring conditions from chemical purchases to chemical usage.

B. This permit authorizes the construction and operation of the following equipment:

Table 1a: Permitted Process Equipment

Emission Unit Number	Emission Unit Description	Manufacturer	Model Number	Serial Number	Manufacture Date	Installation Date	Rated Process Rate
1	Cleaning Area	N/A	N/A	N/A	N/A	~1990-2000	N/A
	Quartz Cleaning						
	Process Clean NAC-1						
	Process Clean NAC-2						
	Process Clean SMS-1						
	Process Clean SMS-2						
	Process Clean SMS-3						
2	Process Clean Dopant VMB	N/A	N/A	N/A	N/A	~1990-2000	N/A
3	Chemical Vapor Deposition Unit (CVDU)	N/A	N/A	N/A	N/A	~1990-2000	N/A
4	Chemical Vapor Deposition Unit (CVDU)	N/A	N/A	N/A	N/A	~1990-2000	N/A
5	Boiler – Natural Gas	Unilux	ZF 800W	A3554	2018/19	2019	8.27 MMBtu/hr

Emission Unit Number	Emission Unit Description	Manufacturer	Model Number	Serial Number	Manufacture Date	Installation Date	Rated Process Rate
6	Chemical Vapor Deposition Unit (CVDU)	N/A	N/A	N/A	N/A	~1990-2000	N/A
8	Emergency Generator – Diesel	Cummins	NTA8550 G3	E940542 482	1994	1994/95	535 hp
9	Boiler – Natural Gas	Unilux	ZF-800W-G	52825	2013/14	2014	8.27 MMBtu/hr
10	Humidifier – Natural Gas	PURE Humidifer Co.	GXDDR-8	NA	TBD	TBD	0.8 MMBtu/hr
11	Humidifier – Natural Gas	PURE Humidifer Co.	GXDDR-8	12694-H2	N/A	~2007	0.8 MMBtu/hr
12	Chemical Vapor Deposition Unit (CVDU)	ASM	E2000	092531 092370 092330 092320	1997	2010	N/A
13	Chemical Vapor Deposition Unit (CVDU)	ASM	E2000	092910 092630 091962 095370 095420 092400	1997	2010	N/A
14	Cooling Tower	BAC	S3E-1222-07O	U174827 501	2017	2017	1,900 gal/min
15	Cooling Tower	BAC	VPI-216-220W	U202475 4	2020	2020	500 gal/min
16	Cooling Tower	BAC	3552C-MM	U147431 70201	2014	2014	1,656 gal/min
17	Cooling Tower	BAC	F1-1662-DMCX	9620072 4	TBD	TBD	500 gal/min
18	Cooling Tower	BAC	S3E-1222-07P	U188609 1	2018	2018	2,100 gal/min

Table 1b: Air Pollution Control Equipment

Control Equipment	Unit Number Controlled by Control Equipment	Manufacturer	Model Number	Serial Number	Pollutants Controlled	Control Efficiency
FS1 – Acid Exhaust Scrubber	1	Beverly Pacific	N/A	Unknown	HF, HCl, HNO ₃ ,	HF – 97% HCl – 98% HNO₃ – 97%
FS2 – Acid Exhaust Scrubber	1	Beverly Pacific	N/A	Unknown	HF, HCl, HNO₃	HF – 97% HCl – 98% HNO₃ – 97%

FS3 – Acid Exhaust Scrubber	2 1	Beverly Pacific	N/A	Unknown	B ₂ H ₆	B₂H₆ – 96% PH ₃ – 95% AsH ₃ – 95%
CVDU Scrubber	3, 4, 6, 12, and 13 1	Air Guard	1997	Unknown	HCl	HCl – 99%

Table 1c: Process Equipment Federal Applicability

Emission Unit Number	Emission Unit Description	Federal Regulation
8	Emergency Engine – Diesel	40 CFR 63, NESHAP

- C. All equipment shall be maintained as per manufacturer specifications to ensure the emissions remain at or below the permitted levels.
- D. This facility shall be modified and operated in accordance with the permit application dated and received May 13, 2021, the additional information received on December 22, 2021, and January 10, 11, and 20, 2022, and in accordance with the legal authority specified above and the conditions of this permit.
- E. Replacement of Emission Units for which an allowable emissions limit has been established in the permit may be requested by the permittee through a technical permit revision in accordance with 20.11.41.28.B.
- F. The following operational restrictions apply to the facility:
- 1) A fence or other type of barrier shall be installed and maintained to restrict access to southern, western and northern parts of the property; The end of the building was used a property boundary on the eastern side of the facility;
 - 2) The facility is authorized to operate continuously, 24 hours per day and 7 days per week, 365 days per year;
 - 3) Permittee shall be limited to the following chemical usage to demonstrate compliance with the HAP emission. The amount of chemical usage shall be recorded on a 12-month rolling total:
 - 2,350 gallons of Hydrofluoric Acid; 3,000 gallons of HF
 - 225,000 pounds of Hydrochloric Acid;
 - 269,295 gallons of Diborane ~~Remove Diborane - This is not a HAP~~
 - 179,530 gallons of Phosphine; 100 lb/yr of Phosphine;
 - ~~143,625 gallons of Arsine;~~ 200 lb/yr of Arsine; and
 - ~~200 gallons of Nitric Acid.~~ ~~Remove Nitric Acid - This is not a HAP~~
 - 4) Emission Units 5 and 9 collectively shall not exceed 8,760 hours of operation per 12-month rolling total. Only one boiler shall operate at any given time;

- 5) Emission Unit 8 shall not exceed 500 hours of operation per 12-month rolling total. These hours of operation are the basis of the annual tons per year and annual emission fee pursuant to Condition 11 for all air pollutants associated with emission unit 8.
- In order for Emission Unit 8 to be considered an emergency stationary RICE under 40 CFR Subpart ZZZZ, any operation, other than emergency operation, maintenance testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1), (f)(2), and (f)(4) of §63.6640 is prohibited. If Emission Unit 8 is not operated according to the requirements of in paragraphs (f)(1) through (f)(4) of §63.6640, the engine will not be considered an emergency engine and shall meet all requirements for non-emergency engines. The requirements of (f)(1), (f)(2), and (f)(4) of §63.6640 are the following:
- a) There is no limit on the use of emergency situations
 - b) Emission Unit 8 may operate for up to 100 hours per calendar year for the following:
 - i) Maintenance checks and readiness testing
 - c) Emission Unit 8 may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (f)(2) of this section.
- 6) ~~Emission Units 10 and 11 collectively shall not exceed 8,760 hours of operation per 12-month rolling total. Only one unit shall operate at any given time~~

- G.** The above conditions have been placed in the permit based on air dispersion modeling of the facility at this location to demonstrate compliance with the National Ambient Air Quality Standards and New Mexico Ambient Air Quality Standards for NO₂, CO, SO₂, PM₁₀ and PM_{2.5};
- H.** Changes in plans, specifications, and other representations proposed in the application documents shall not be made if they will increase the potential to emit or cause a change in the method of control of emissions or in the character of emissions. Any such proposed changes shall be submitted as a modification to this permit. No modification shall begin prior to issuance of a permit.
- I.** The emission of a regulated air pollutant in excess of the quantity, rate, opacity, or concentration specified in an air quality regulation or permit condition that results in an excess emission is a violation of the air quality regulation or permit condition and may be subject to an enforcement action. The owner or operator of a source having an excess emission shall, to the extent practicable, operate the source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions. This condition is pursuant to 20.11.49.14 NMAC.
- J.** Not complying with the above minimum conditions shall be a violation of the applicant's permit.

2. Unit Emission Limits

Condition 2 has been placed in the permit in accordance with 40 CFR Part 60 – National Emission Standards for Hazardous Air Pollutants (NESHAP), Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines (RICE) and 20.11.41.19.B NMAC, to allow the Department to determine compliance with the terms and conditions of the permit. These were the process and emission rates stated in the permit application and are the basis of the Department’s review. Compliance will be based on Department inspections of the facility and upon compliance with the emission limits and opacity readings conducted in accordance with the test methods specified in Condition 6 – Compliance Tests.

A. Permittee shall not exceed the following process and annual consumption rate in the table below. The hourly and annual emissions based on a 12-month rolling total were calculated based on this information:

Table2a: Process Units Operational Limitations

Unit #	Emission Unit Description	Control Method and Efficiency (%)	Permitted Process and Annual Consumption Rates
1, 2, 3, 4, 6,	Chemical Vapor Deposition Units	97% - HF; 98% - HCl; 99% - B ₂ H ₆ ; 95% - PH ₃ ; 95% - ASH ₃ ; 97% - HNO₃ Unit 1 controlled the FS1 and FS2 – Exhaust Scrubbers Unit 2 controlled thru FS3- Exhaust Scrubber Units 3, 4,6, 12, 13 controlled thru CVDU Scrubber	HAP emissions based on annual consumption: 2,350 gal/yr of Hydrofluoric Acid; 225,000 lbs/yr of Hydrochloric Acid; 269,295 gal/yr of Diborane 179,530 gal/yr of Phosphine; 143,625 of Arsine; and 200 gal/yr of Nitric Acid.
14 thru 18	Cooling Towers	Emissions based on TDS and circulation rates	Units 14: 1,900 gal/min Units 15 and 17: 500 gal/min Unit 16: 1,656 gal/ min Unit 18: 2,100 gal/min

3000 gal/ yr HF

100lb/hr Phosphine

200 lb/yr Arsine

The facility shall not exceed the emission limits stated in the table below. Tons per year emissions shall be based on a 12-month rolling total.

Table 2b: Emission Limits

Unit No.	NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy	PM2.5 lb/hr	PM2.5 tpy
1	-	-	-	-	-	-	-	-	-	-	-	-
2		-	-	-	-	-	-	-	-	-	-	-
3, 4, 6, 12 & 13	-	-	-	-	-	-	-	-	-	-	-	-
5 & 9 ¹	0.811	3.551	0.681	2.983	0.045	0.195	0.005	0.020	0.0616	0.2699	0.0616	0.2699
8	19.902	4.976	6.075	1.519	1.586	0.396	1.316	0.329	1.4124	0.3531	1.4124	0.3531
10 & 11 ²	0.078	0.344	0.066	0.289	0.004	0.019	0.000	0.002	0.0060	0.0261	0.0060	0.0261
14	-	-	-	-	-	-	-	-	0.0586	0.2567	0.0004	0.0016
15	-	-	-	-	-	-	-	-	0.0154	0.0676	0.0001	0.0004
16	-	-	-	-	-	-	-	-	0.0511	0.2237	0.0003	0.0014
17	-	-	-	-	-	-	-	-	0.0154	0.0676	0.0001	0.0004
18	-	-	-	-	-	-	-	-	0.0648	0.2837	0.0004	0.0017
Total	20.791	8.870	6.822	4.790	1.635	0.611	1.321	0.351	1.678	1.515	1.481	0.654

¹ Emission Units 5 and 9 are not allowed to operate simultaneously.

² ~~Emission Units 10 and 11 are not allowed to operate simultaneously.~~

B. Emission Unit 8 (Emergency Generator) is subject to the following requirements:

- 1) To demonstrate compliance with §63.6603 and the requirement of Table 2d of this subpart, Unit 8 is subject to the following compliance requirements for existing stationary RICE located at an area source of HAPs emissions:
- 2) Change oil and filter every 500 hours of operation or annually, whichever comes first;
- 3) Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and
- 4) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

C. According to §63.6604(b), the diesel fuel of Emission Unit 8 shall meet the fuel standards in 40 CFR 1090.305, which are the following:

- 1) Sulfur standard: Maximum sulfur content of 15 ppm. And
- 2) Cetane index or aromatic content: diesel fuel shall meet one of the following standards:
 - a) Minimum cetane index of 40, or
 - b) Maximum aromatic content of 35 volume percent.

D. Pursuant to §63.6625(i), Permittee has the option to utilizing an oil analysis program in order to extend the specified oil change requirement in Table 2d to this subpart.

The oil analysis shall be performed at the same frequency specified for changing the oil in Table 2d to this subpart. The analysis program shall at a minimum analyze the following three parameters:

- 1) Total Base Number, viscosity, and percent water content. The condemning limits for these parameters are as follows:

- a) Total Base Number is less than 30 percent of the Total Base Number of the oil when new;
 - b) viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or
 - c) percent water content (by volume) is greater than 0.5.
- 2) If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator shall change the oil within 2 business days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator shall change the oil within 2 business days or before commencing operation, whichever is later.
 - 3) The owner or operator shall keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine.
 - 4) The analysis program shall be part of the maintenance plan for the engine.
- E.** Pursuant to §63.6640 and Table 6, Item 9 of this Subpart, Permittee shall demonstrate continuous compliance by:
- 1) Operating and maintaining the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or
 - 2) Develop and follow your own maintenance plan which shall provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.
- F.** Permittee shall operate and maintain the scrubbers (FS1, FS2, FS3 and CVDU) according to manufacturers' specifications.
- G.** The acid exhaust scrubbers, FS1, FS2, ~~and FS3~~ shall operate within the following parameters:
- 1) Water flow rate between 70 and 90 gpm
 - 2) Spray head pressure between 32 and 45 psi
 - 3) ~~pH less than 7~~
- H.** ~~The acid exhaust scrubber FS3 shall operate within the following parameters:~~
- 1) ~~Water flow rate between 60 and 80 gpm~~
 - 2) ~~Spray head pressure between 22 and 30 psi~~
- I.** The CVDU scrubber shall operate within the following parameter:
- 1) ~~Gas flow rate between 65 and 120 SLM (standard liters per minute)~~
 - 2) Water flow rate between 1 and 3 gpm (gallons per minute)
 - 3) ~~pH less than 7; and~~
 - 4) ~~Pressure drop between of 1" and 4" of water column~~

3. Monitoring

Condition 3 has been placed in the permit in accordance with 40 CFR Part 60 – NESHAP, Subpart ZZZZ – Stationary RICE, 20.11.41.19.B(4) NMAC and 20.11.41.19.C(3),(4),(5),(6) and (7) NMAC to allow the Program to determine compliance with the terms and conditions of the permit. Compliance will be based on Program inspection of equipment and logs. The permittee shall install the appropriate equipment deemed necessary by the Program for performance testing and continuous emissions monitoring.

- A. The permittee shall monitor the chemical usage on a monthly basis to demonstrate compliance with the HAP emissions. The total amount shall not exceed the amounts listed in Table 2a and the total shall be based on a 12-month rolling total.
- B. The permittee shall monitor the hour of operations of Units 5 and 9. The sum of the total hours of both boilers (Units 5 and 9) shall not exceed 8,760 hours per year. The total hours shall be based on a 12-month rolling total.
- C. The permittee shall monitor the hours of operation of Emission Unit 8 using a non-resettable hour meter.
- ~~D. The permittee shall monitor the hour of operations of Unit 10 and 11. The sum of the total hours of both humidifiers (Units 10 and 11) shall not exceed 8,760 hours per year. The total hours shall be based on a 12-month rolling total.~~
- E. To ensure the efficiency of the FS1, FS2, and FS3 scrubbers, Permittee shall monitor the following parameters of on a daily basis:
 - 1) Water flow rate;
 - 2) Spray head pressure; and
 - ~~3) pH: if the pH level is moving away from the ideal level, make the adjustments needed to return the pH level within the ideal range.~~
- F. To ensure the efficiency of the CVDU scrubber, Permittee shall do the following to the equipment:
 - 1) Monitor the following parameters of on a daily basis:
 - ~~a) Gas flow rate of the CVDU scrubber;~~
 - b) Water flow rate;
 - ~~c) pH: if the pH level is moving away from the ideal level, make the adjustments needed to return the pH level within the ideal range, and~~
 - ~~d) Pressure drop in the scrubber and mist eliminator.~~
- ~~G. Shall monitor on a daily basis the flow rate and temperature of the cooling towers (Emission Units 14, 15, 16, 17, and 18).~~

4. Recordkeeping

Condition 4 has been placed in the permit in accordance with 40 CFR Part 60 – NESHAP, Subpart ZZZZ – Stationary RICE, 20.11.41.19.B(4) NMAC and 20.11.41.19.C(8) and (9) NMAC to allow the Program to determine compliance with the terms and conditions of the permit. Compliance will be based on Program inspection of records and logs.

- A.** The permittee shall maintain records and a log of the monthly chemical usage of each of the chemicals listed in Table 2a to demonstrate compliance with their HAP emissions

- B.** The permittee shall keep records of the hours of operation of each boiler (Unit 5 and 9), and the dates and times each boiler operated. The sum of the total hours of operation of both boilers cannot exceed 8,760 hours on a 12-month rolling basis.

- C.** Pursuant to §63.6655 (except for §63.6655(c)), the permittee shall keep the following records for Unit 8 to demonstrate compliance with the emission and operating limitations of this subpart:
 - 1) Records of the occurrence and duration of each malfunction of operation (i.e., process equipment) or the air pollution control and monitoring equipment
 - 2) Records of all required maintenance performed on the air pollution control and monitoring equipment.
 - 3) Records of actions taken during periods of malfunction to minimize emissions in accordance with §63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.
 - 4) Keep records of the maintenance conducted on the stationary RICE in order to demonstrate that you operated and maintained the stationary RICE and after-treatment control device (if any) according to your own maintenance plan;
 - 5) Keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. Permittee shall document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engine is used for the purposes specified in §63.6640(f)(4)(ii), Permittee shall keep records of the notification of the emergency situation, and the date, start time, and end time of engine operation for these purposes.

- D.** To demonstrate compliance §63.6603 and the requirements of Table 2d of that subpart, the permittee shall maintain the following records:
 - 1) Maintain records of oil change and filter change of Unit 8
 - 2) Maintain inspection records of the air cleaner. The records shall include the unit information, the date and the odometer reading.
 - 3) Maintain inspection records of the hoses and belts. The records shall include the unit information, the date and the odometer reading.

- E.** According to §63.6660, the records for Unit 8 shall be kept as follows:
 - 1) Records shall be in a form suitable and readily available for expeditious review according to §63.10(b)(1).
 - 2) As specified in § 63.10(b)(1), the permittee shall keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

- 3) The permittee shall keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to § 63.10(b)(1).
- F.** Permittee shall maintain records of the fuel purchase specifications for Unit 8 to demonstrate compliance with the fuel requirements of §63.6604(b).
- G.** If permittee chooses to demonstrate compliance utilizing an oil analysis program for Unit 8, the records shall be maintained as follows:
- 1) The unit information, date and odometer reading of when the oil analysis was conducted.
 - 2) The oil analysis shall include the total base number, viscosity and percent of water content of the oil to demonstrate that they are below the parameters provided in section 2.D. If these parameters are exceeded, the permittee shall maintain records to demonstrate that the oil was changed.
- ~~**H.** The permittee shall keep records of the hours of operation of each humidifier (Units 10 and 11), and dates and times each humidifier operated. The sum of the total hours of operation of both humidifiers shall not exceed 8,760 hours on a 12-month rolling basis.~~
- I.** The permittee shall maintain daily records of the flow rate and temperature of the cooling towers (Emission Units 14, 15, 16, 17, and 18).
- J.** The permittee shall maintain daily records of the monitoring activities on the scrubbers (FS1, FS2, FS3, and CDVU) to demonstrate that the efficiency of the control equipment.
- K.** The permittee shall maintain records to demonstrate that the scrubbers (FS1, FS2, FS3 and CDVU) are operated and maintained according to the manufacturer's specifications.

5. Reporting

Condition 5 has been placed in the permit in accordance with 40 CFR Part 60 – NESHAP, Subpart ZZZZ – Stationary RICE, 20.11.41.21 NMAC and 20.11.90 NMAC to allow the Program to determine compliance with the terms and conditions of the permit. Compliance will be based on timely submittal of the reports, notifications, and required information and shall be made in accordance with CFR Title 40, Part 60, Subpart A - General Provisions and 20.11.41.21 NMAC.

The permittee shall notify the Program in writing of:

- A.** Pursuant to §63.6650 and Footnote 2 of Table 2d, if Emission Unit 8 operates during an emergency and it is not possible to shut down the engine in order to perform the management practice requirements on the schedule required in Table 2d of this subpart, or if performing the management practice on the required schedule would otherwise pose an unacceptable risk under federal, state, or local law, the management practice can be delayed until the emergency is over or the unacceptable risk under federal, state, or local law has abated. The management practice should be performed as soon as practicable after the emergency has ended or the unacceptable risk under federal, state, or local law has abated. Sources shall report any failure to perform the management practice on the schedule required and the federal, state or local law under which the risk was deemed unacceptable.

Additionally, if Emission Unit 8 is contractually obligated to be available for more than 15 hours per calendar year that operates for the purpose specified in § 63.6640(f)(4)(ii), Permittee shall submit an annual report according to the requirements in paragraphs (h)(1) through (h)(3) of §63.6650:

- 1) The report shall contain the following information:
 - a) Company name and address where the engine is located.
 - b) Date of the report and beginning and ending dates of the reporting period.
 - c) Engine site rating and model year.
 - d) Latitude and longitude of the engine in decimal degrees reported to the fifth decimal place.
 - e) Hours spent for operation for the purpose specified in § 63.6640(f)(4)(ii), including the date, start time, and end time for engine operation for the purposes specified in § 63.6640(f)(4)(ii). The report shall also identify the entity that dispatched the engine and the situation that necessitated the dispatch of the engine.
 - f) If there were no deviations from the fuel requirements in § 63.6604 that apply to the engine (if any), a statement that there were no deviations from the fuel requirements during the reporting period.
 - g) If there were deviations from the fuel requirements in §63.6604 that apply to the engine (if any), information on the number, duration, and cause of deviations, and the corrective action taken.

- B.** The date construction (40 CFR 60.7(a)(1)) is commenced, postmarked no later than 30 days after such date. This requirement shall not apply in the case of mass-produced facilities which are purchased in completed form;

- C.** The anticipated startup of the source not less than thirty (30) days prior to that date (20.11.41.21.A(1) NMAC and 40 CFR 60.7(a)(1)), to include the equipment manufacturer and model numbers from the possibilities listed in the Process Equipment Table;

- D.** The actual date of initial startup of the source within fifteen (15) days after the initial startup date (20.11.41.21.A(3) NMAC and 40 CFR 60.7(a)(3)), to include the equipment manufacturer and model numbers from the possibilities listed in the Process Equipment Table;

- E.** Any change in control or ownership, name, address, or contact information. The permittee may request an administrative permit revision in accordance with 20.11.41.28.A NMAC;

- F.** Any permit update or correction as required by 20.11.41 NMAC no more than 60 days after the permittee knows or should have known about the condition that requires updating or correction of the permit (20.11.41.21.A(6) NMAC);

- G.** An updated annual (January 1 through December 31 of previous calendar year) emissions inventory for the source together with descriptions of any reconfiguration of process technology and air pollution equipment March 15 every year, which shall include annual hours of operation, and the annual production throughput in tons.

H. The permittee of a source having an excess emission shall provide the Program with the following reports on forms provided by the Program:

- 1) **INITIAL REPORT:** The permittee shall file an initial report, no later than the end of the next regular business day after the time of discovery of an excess emission pursuant to 20.11.49.15.A(1) NMAC;
- 2) **FINAL REPORT:** The permittee shall file a final report, no later than 10 days after the end of the excess emission. If the period of an excess emission extends beyond 10 days, the permittee shall submit the final report to the Program within 72 hours of the date and time the excess emission ceased. This condition is pursuant to 20.11.49.15.A(2) NMAC and 20.11.49.15.C NMAC; and,
- 3) **ALTERNATIVE REPORTING:** If the Facility is subject to the reporting requirements of 40 CFR Parts, 60, 61, and 63 and the federal requirements duplicate the requirements of 20.11.49.15 NMAC, then the federal reporting requirements shall suffice. This condition is pursuant to 20.11.49.15.D NMAC.

6. Compliance Tests

Condition 6 has been placed in the permit in accordance with CFR Title 40, Part 60, Subpart A General Provisions, 40 CFR Part 60 – NESHAP, Subpart ZZZZ – Stationary RICE, 20.11.41.22 NMAC and 20.11.90.13 NMAC. Compliance will be based on the satisfactory completion of the compliance tests, the timely submittal of the Emission Unit test results to the Program, and on meeting the emission limits specified in Condition 2.

- A.** Initial and annual compliance tests for Emission Unit 8 have not been imposed at this time.
- B.** Compliance tests may be imposed or re-imposed, if inspections of the source indicate non-compliance with permit conditions or the previous test showed non-compliance or was technically unsatisfactory.
- C.** When compliance tests are imposed, the owner or operator shall notify the Department at least thirty (30) days prior to any test imposed on the permittee and allow a representative of the Department to be present at the test. (CFR 60.8 (d), Subpart A)
- D.** When compliance tests are imposed, the permittee shall provide for the Department's approval, a written test protocol at least fifteen (15) days prior to the anticipated test date for any test imposed by the Department. The protocol shall describe the test methods to be used (including sampling locations), and shall describe data reduction procedures. Any variation from the established sampling and analytical procedures or from facility operating conditions shall be presented for Department approval. The test protocol shall conform to the standard format specified by the Department.
- E.** When compliance tests are imposed, all tests imposed by the Department shall be conducted at ninety (90%) percent of the equipment permitted capacity or greater to demonstrate compliance with the permitted emission limits. Compliance testing at other than 90% production levels shall be performed at the Department's request and/or approval. (40 CFR 60.8(c), Subpart A)

- F. When compliance tests are imposed, one copy of the compliance test results for any imposed test shall be submitted to the Department Enforcement Section within thirty (30) days after the completion of testing. The test results shall conform to the standard format specified by the Department.

7. Modifications

Condition 7 has been placed in the permit in accordance with 20.11.41.7.U NMAC, to enable the Program to review proposed changes to the Facility which may constitute a permit modification prior to such changes. Compliance will be based on Program inspections, the submittal of a new permit application for any modification and the issuance of a modified permit before any modification takes place.

- A. Any future physical changes or changes in the method of operation which results in an increase in the pre-controlled emission rate or emission of a contaminant not previously emitted may constitute a modification as defined by 20.11.41.7.U NMAC. No modification shall begin prior to issuance of a permit. Modifications or revisions to this permit shall be processed in accordance with 20.11.41 NMAC.

8. Administrative and Technical Revisions

Condition 8 has been placed in the permit in accordance with 20.11.41.28.A and B NMAC, respectively, to enable the Program to make administrative or technical revision to a permit. Compliance will be based on the Program inspections, the submittal of the request for an administrative or technical revision and the issuance of the administrative or technical revision before the changes take place.

9. Compliance Assurance/ Enforcement

All air pollution emitting facilities within Bernalillo County are subject to all applicable Albuquerque/Bernalillo County Air Quality Control Regulations, whether listed in this permit or not.

- A. The issuance of a permit or registration does not relieve the Facility from responsibility of complying with the provisions of the Air Quality Control Act, and the laws and regulations in force pursuant to the Act. (20.11.41.18 NMAC).
- B. Any conditions imposed upon the Facility in a Construction Permit or any other permit issued by the Program shall be enforceable to the same extent as a regulation of the Board. (20.11.41.19.D NMAC).
- C. The Program is authorized to issue a compliance order requiring compliance and assessing a civil penalty not to exceed Fifteen Thousand and no/100 Dollars (\$15,000) per day of noncompliance for each violation or to commence a civil action in district court for appropriate relief, including a temporary and permanent injunction. (74-2-12 NMSA).
- D. Scheduled and Unscheduled Inspection (74-2-13 NMSA) -- The Program will conduct scheduled and unscheduled inspections to insure compliance with the Air Quality Control Act, the laws and regulations in force pursuant to the Act, and this permit. Upon presentation of credentials the Program:

- 1) Shall have a right of entry to, upon, or through any premises on which an emission source is located or on which any records required to be maintained by regulations of the Board or by any permit condition are located;
- 2) May at any reasonable time have access to and copy any records required to be established and maintained by Regulations of the Board, or any permit condition;
- 3) May inspect any monitoring equipment and method required by Regulations of the Board or by any permit condition; and,
- 4) Sample any emissions that are required to be sampled pursuant to Regulation of the Board, or any permit condition.

E. Any credible evidence may be used to establish whether the Facility has violated or is in violation of any regulation of the Board, or any other provision of law. Credible evidence and testing shall include, but is not limited to (20.11.41.27A and B NMAC):

- 1) A monitoring method approved for the source pursuant to 20.11.42 NMAC “Operating Permits” and incorporated into an operating permit;
- 2) Compliance methods specified in the Regulations, conditions in a permit issued to the Facility, or other provision of law;
- 3) iii. Federally enforceable monitoring or testing methods, including methods in CFR Title 40 Parts 51, 60, 61, and 75; and,
- 4) Other testing, monitoring or information-gathering methods that produce information comparable to that produced by any CFR method and approved by the Program and EPA.

10. Posting of the Permit

Condition 10 has been placed in the permit in accordance with 20.11.41.19.B(4) NMAC to allow the Department to determine compliance based on inspections of the Facility, which show that a copy of the permit has been posted in a visible location. A copy of this permit shall be posted in a visible location at the plant site at all times. The permit shall be made available to Program personnel for inspection upon request.

11. Annual Fees

Condition 11 has been placed in the permit in accordance with 20.11.2 NMAC to allow the Program to determine compliance with the terms and conditions of the permit. Compliance will be based on the timely receipt of the annual emissions fee due each year to the Program pursuant to 20.11.2 NMAC. Every owner or operator (permittee) of a source that is required to obtain a source registration, a Construction permit, an operating permit, or a preconstruction permit shall pay an annual emissions fee pursuant to 20.11.2 NMAC, 20.11.40 NMAC, 20.1.41 NMAC, 20.11.42 NMAC, 20.11.60 NMAC, 20.11.61 NMAC, or 20.11.62 NMAC.

Table 11a: Facility Wide Fee Pollutants based on Annual Emissions

Fee Pollutant	Tons per Year
Oxides of Nitrogen (NO _x)	9
Carbon Monoxide (CO)	5
Volatile Organic Compounds (VOC)	1
Oxides of Sulfur (SO _x)	0
Particulate Matter 10 (PM ₁₀)	2
Hazardous Air Pollutants (HAP)	1
Facility Wide Fee - Total Emissions	18

II. ADDITIONAL REQUIREMENTS

1. Permit Cancellation

The Program may cancel any permit if the construction or modification has not commenced within two (2) years from the date of issuance or if, during the construction or modification, work is suspended for a total of one (1) year pursuant to 20.11.41.20.B NMAC.

2. Contact Information

Application for permit modifications, relocation notices and items listed under ADDITIONAL REQUIREMENTS shall be submitted to:

Albuquerque Environmental Health Department
Air Quality Program
Permitting Division
P.O. Box 1293
Albuquerque, New Mexico 87103

Test protocols and compliance test reports shall be submitted to:

Albuquerque Environmental Health Department
Air Quality Program
Attention: Enforcement Supervisor
P.O. Box 1293
Albuquerque, New Mexico 87103

All compliance reports shall be submitted to:

Albuquerque Environmental Health Department
Air Quality Program
Attention: Compliance Supervisor
P.O. Box 1293
Albuquerque, New Mexico 87103