

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



November 21, 2022

Laurie Gharis, Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087, MC 105
Austin, Texas 78711-3087

Re: Backup Material for Executive Director's Response to Hearing Requests and
Response to Requests for Reconsideration
Exflor Research Corporation
Permit No. 165848
TCEQ DOCKET NUMBER 2022-1552-AIR

Dear Ms. Gharis:

Enclosed please find a copy of the following documents for inclusion in the background material for this permit application:

- The draft permit and Maximum Allowable Emissions Rate Table;
- The summary of the technical review of the permit application, which includes a compliance summary of the applicant;
- The Air Quality Analysis Audit memorandum; and
- A compliance summary for the Applicant.

If you have any questions, please do not hesitate to call me at extension 6033 or Abigail Adkins at extension 2496.

Sincerely,

A handwritten signature in blue ink, appearing to read "Betsy Peticolas".

Betsy Peticolas
Staff Attorney
Environmental Law Division

Enclosures



Texas Commission on Environmental Quality Air Quality Permit

A Permit Is Hereby Issued To
Exflur Research Corporation
Authorizing the Construction and Operation of
Exflur Research
Located at Florence, Williamson County, Texas
Latitude 30° 47' 28" Longitude -97° 54' 15"

Permit: 165848

Issuance Date: _____

Expiration Date: _____

For the Commission

1. **Facilities** covered by this permit shall be constructed and operated as specified in the application for the permit. All representations regarding construction plans and operation procedures contained in the permit application shall be conditions upon which the permit is issued. Variations from these representations shall be unlawful unless the permit holder first makes application to the Texas Commission on Environmental Quality (commission) Executive Director to amend this permit in that regard and such amendment is approved. [Title 30 Texas Administrative Code (TAC) Section 116.116 (30 TAC § 116.116)]¹
2. **Voiding of Permit.** A permit or permit amendment is automatically void if the holder fails to begin construction within 18 months of the date of issuance, discontinues construction for more than 18 months prior to completion, or fails to complete construction within a reasonable time. Upon request, the executive director may grant an 18-month extension. Before the extension is granted the permit may be subject to revision based on best available control technology, lowest achievable emission rate, and netting or offsets as applicable. One additional extension of up to 18 months may be granted if the permit holder demonstrates that emissions from the facility will comply with all rules and regulations of the commission, the intent of the Texas Clean Air Act (TCAA), including protection of the public's health and physical property; and (b)(1) the permit holder is a party to litigation not of the permit holder's initiation regarding the issuance of the permit; or (b)(2) the permit holder has spent, or committed to spend, at least 10 percent of the estimated total cost of the project up to a maximum of \$5 million. A permit holder granted an extension under subsection (b)(1) of this section may receive one subsequent extension if the permit holder meets the conditions of subsection (b)(2) of this section. [30 TAC § 116.120]
3. **Construction Progress.** Start of construction, construction interruptions exceeding 45 days, and completion of construction shall be reported to the appropriate regional office of the commission not later than 15 working days after occurrence of the event. [30 TAC § 116.115(b)(2)(A)]
4. **Start-up Notification.** The appropriate air program regional office shall be notified prior to the commencement of operations of the facilities authorized by the permit in such a manner that a representative of the commission may be present. The permit holder shall provide a separate notification for the commencement of operations for each unit of phased construction, which may involve a series of units commencing operations at different times. Prior to operation of the facilities authorized by the permit, the permit holder shall identify the source or sources of allowances to be utilized for compliance with Chapter 101, Subchapter H, Division 3 of this title (relating to Mass Emissions Cap and Trade Program). [30 TAC § 116.115(b)(2)(B)]
5. **Sampling Requirements.** If sampling is required, the permit holder shall contact the commission's Office of Compliance and Enforcement prior to sampling to obtain the proper data forms and procedures. All sampling and testing procedures must be approved by the executive director and coordinated with the regional representatives of the commission. The permit holder is also responsible for providing sampling facilities and conducting the sampling operations or contracting with an independent sampling consultant. [30 TAC § 116.115(b)(2)(C)]
6. **Equivalency of Methods.** The permit holder must demonstrate or otherwise justify the equivalency of emission control methods, sampling or other emission testing methods, and monitoring methods proposed as alternatives to methods indicated in the conditions of the permit. Alternative methods shall be applied for in writing and must be reviewed and approved by the executive director prior to their use in fulfilling any requirements of the permit. [30 TAC § 116.115(b)(2)(D)]
7. **Recordkeeping.** The permit holder shall maintain a copy of the permit along with records containing the information and data sufficient to demonstrate compliance with the permit, including production records and

operating hours; keep all required records in a file at the plant site. If, however, the facility normally operates unattended, records shall be maintained at the nearest staffed location within Texas specified in the application; make the records available at the request of personnel from the commission or any air pollution control program having jurisdiction in a timely manner; comply with any additional recordkeeping requirements specified in special conditions in the permit; and retain information in the file for at least two years following the date that the information or data is obtained. [30 TAC § 116.115(b)(2)(E)]

8. **Maximum Allowable Emission Rates.** The total emissions of air contaminants from any of the sources of emissions must not exceed the values stated on the table attached to the permit entitled "Emission Sources-- Maximum Allowable Emission Rates." [30 TAC § 116.115(b)(2)(F)]¹
9. **Maintenance of Emission Control.** The permitted facilities shall not be operated unless all air pollution emission capture and abatement equipment is maintained in good working order and operating properly during normal facility operations. The permit holder shall provide notification in accordance with 30 TAC §101.201, 101.211, and 101.221 of this title (relating to Emissions Event Reporting and Recordkeeping Requirements; Scheduled Maintenance, Startup, and Shutdown Reporting and Recordkeeping Requirements; and Operational Requirements). [30 TAC§ 116.115(b)(2)(G)]
10. **Compliance with Rules.** Acceptance of a permit by an applicant constitutes an acknowledgment and agreement that the permit holder will comply with all rules and orders of the commission issued in conformity with the TCAA and the conditions precedent to the granting of the permit. If more than one state or federal rule or regulation or permit condition is applicable, the most stringent limit or condition shall govern and be the standard by which compliance shall be demonstrated. Acceptance includes consent to the entrance of commission employees and agents into the permitted premises at reasonable times to investigate conditions relating to the emission or concentration of air contaminants, including compliance with the permit. [30 TAC § 116.115(b)(2)(H)]
11. **This** permit may not be transferred, assigned, or conveyed by the holder except as provided by rule. [30 TAC § 116.110(e)]
12. **There** may be additional special conditions attached to a permit upon issuance or modification of the permit. Such conditions in a permit may be more restrictive than the requirements of Title 30 of the Texas Administrative Code. [30 TAC § 116.115(c)]
13. **Emissions** from this facility must not cause or contribute to "air pollution" as defined in Texas Health and Safety Code (THSC) §382.003(3) or violate THSC § 382.085. If the executive director determines that such a condition or violation occurs, the holder shall implement additional abatement measures as necessary to control or prevent the condition or violation.
14. **The** permit holder shall comply with all the requirements of this permit. Emissions that exceed the limits of this permit are not authorized and are violations of this permit.¹

¹ Please be advised that the requirements of this provision of the general conditions may not be applicable to greenhouse gas emissions.

Common Acronyms in Air Permits

°C = Temperature in degrees Celsius
°F = Temperature in degrees Fahrenheit
°K = Temperature in degrees Kelvin
µg = microgram
µg/m³ = microgram per cubic meter
acfm = actual cubic feet per minute
AMOC = alternate means of control
AOS = alternative operating scenario
AP-42 = Air Pollutant Emission Factors, 5th edition
APD = Air Permits Division
API = American Petroleum Institute
APWL = air pollutant watch list
BPA = Beaumont/ Port Arthur
BACT = best available control technology
BAE = baseline actual emissions
bbl = barrel
bbl/day = barrel per day
bhp = brake horsepower
BMP = best management practices
Btu = British thermal unit
Btu/scf = British thermal unit per standard cubic foot or feet
CAA = Clean Air Act
CAM = compliance-assurance monitoring
CEMS = continuous emissions monitoring systems
cfm = cubic feet (per) minute
CFR = Code of Federal Regulations
CN = customer ID number
CNG = compressed natural gas
CO = carbon monoxide
COMS = continuous opacity monitoring system
CPMS = continuous parametric monitoring system
DFW = Dallas/ Fort Worth (Metroplex)
DE = destruction efficiency
DRE = destruction and removal efficiency
dscf = dry standard cubic foot or feet
dscfm = dry standard cubic foot or feet per minute
ED = (TCEQ) Executive Director
EF = emissions factor
EFR = external floating roof tank
EGU = electric generating unit
EI = Emissions Inventory
ELP = El Paso
EPA = (United States) Environmental Protection Agency
EPN = emission point number
ESL = effects screening level
ESP = electrostatic precipitator
FCAA = Federal Clean Air Act
FCCU = fluid catalytic cracking unit
FID = flame ionization detector
FIN = facility identification number
ft = foot or feet
ft/sec = foot or feet per second
g = gram
gal/wk = gallon per week
gal/yr = gallon per year
GLC = ground level concentration
GLCmax = maximum (predicted) ground-level concentration
gpm = gallon per minute
gr/1000scf = grain per 1000 standard cubic feet
gr/dscf = grain per dry standard cubic feet
H₂CO = formaldehyde
H₂S = hydrogen sulfide
H₂SO₄ = sulfuric acid
HAP = hazardous air pollutant as listed in § 112(b) of the Federal Clean Air Act or Title 40 Code of Federal Regulations Part 63, Subpart C
HC = hydrocarbons
HCl = hydrochloric acid, hydrogen chloride
Hg = mercury
HGB = Houston/Galveston/Brazoria
hp = horsepower
hr = hour
IFR = internal floating roof tank
in H₂O = inches of water
in Hg = inches of mercury
IR = infrared
ISC3 = Industrial Source Complex, a dispersion model
ISCST3 = Industrial Source Complex Short-Term, a dispersion model
K = Kelvin; extension of the degree Celsius scaled-down to absolute zero
LACT = lease automatic custody transfer
LAER = lowest achievable emission rate
lb = pound
hp = horsepower
hr = hour
lb/day = pound per day
lb/hr = pound per hour
lb/MMBtu = pound per million British thermal units
LDAR = Leak Detection and Repair (Requirements)
LNG = liquefied natural gas
LPG = liquefied petroleum gas
LT/D = long ton per day
m = meter
m³ = cubic meter
m/sec = meters per second
MACT = maximum achievable control technology
MAERT = Maximum Allowable Emission Rate Table
MERA = Modeling and Effects Review Applicability
mg = milligram
mg/g = milligram per gram
mL = milliliter
MMBtu = million British thermal units
MMBtu/hr = million British thermal units per hour
MSDS = material safety data sheet
MSS = maintenance, startup, and shutdown
MW = megawatt
NAAQS = National Ambient Air Quality Standards
NESHAP = National Emission Standards for Hazardous Air Pollutants
NGL = natural gas liquids
NNSR = nonattainment new source review
NO_x = total oxides of nitrogen

NSPS = New Source Performance Standards
PAL = plant-wide applicability limit
PBR = Permit(s) by Rule
PCP = pollution control project
PEMS = predictive emission monitoring system
PID = photo ionization detector
PM = periodic monitoring
PM = total particulate matter, suspended in the atmosphere, including PM₁₀ and PM_{2.5}, as represented
PM_{2.5} = particulate matter equal to or less than 2.5 microns in diameter
PM₁₀ = total particulate matter equal to or less than 10 microns in diameter, including PM_{2.5}, as represented
POC = products of combustion
ppb = parts per billion
ppm = parts per million
ppmv = parts per million (by) volume
psia = pounds (per) square inch, absolute
psig = pounds (per) square inch, gage
PTE = potential to emit
RA = relative accuracy
RATA = relative accuracy test audit
RM = reference method
RVP = Reid vapor pressure
scf = standard cubic foot or feet
scfm = standard cubic foot or feet (per) minute
SCR = selective catalytic reduction
SIL = significant impact levels
SNCR = selective non-catalytic reduction
SO₂ = sulfur dioxide
SOCMI = synthetic organic chemical manufacturing industry
SRU = sulfur recovery unit
TAC = Texas Administrative Code
TCAA = Texas Clean Air Act
TCEQ = Texas Commission on Environmental Quality
TD = Toxicology Division
TLV = threshold limit value
TMDL = total maximum daily load
tpd = tons per day
tpy = tons per year
TVP = true vapor pressure
VOC = volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
VRU = vapor recovery unit or system

Special Conditions

Permit Number 165848

1. This permit covers only those sources of emissions listed in the attached table entitled "Emission Sources - Maximum Allowable Emission Rates" (MAERT), and those sources are limited to the emission limits and other conditions specified in that table.
2. Non-fugitive emissions from relief valves, safety valves, or rupture discs of gases containing volatile organic compounds (VOC) at a concentration of greater than 1 percent are not authorized by this permit unless authorized on the MAERT. Any releases directly to atmosphere from relief valves, safety valves, or rupture discs of gases containing VOC at a concentration greater than 1 weight percent are not consistent with good practice for minimizing emissions.

Emission Standards and Operational Specifications

3. The process vents from the Fluorine Generators, Fluorination Reactors, Thermal Cracking Reactors, Distillation Units, Polishing Reactors, Reduction Reactors, Hydrolysis Reactors, Methanolysis Reactors, Bromination Reactors, Extraction Tank, Anhydride Flasks, Acrylate Flasks, and Drying Flask shall be routed to the Exhaust Gas Vent System (EPN EP3-1).
4. Annual production shall not the rates listed in the Table 2 Material Balance submitted with application form PI-1 dated July 9, 2021. Production records shall be updated monthly with the rates of each product produced during the previous month and rolling 12 months to date.
5. The thermal oxidizers shall be fired with hydrogen.

Thermal Oxidizers

6. The following requirements shall apply to Thermal Oxidizer 1 (EPN EP3-1).
 - A. Thermal Oxidizer 1 (EPN EP3-1), shall maintain the VOC concentration in the exhaust gas less than 10 ppmv on a dry basis, corrected to 3 percent oxygen, or achieve a VOC destruction efficiency greater than 99.9 percent.
 - B. The thermal oxidizer firebox exit temperature shall be maintained at not less than 2000°C and exhaust oxygen concentration not less than 3 percent on a six-minute average while waste gas is being fed into the oxidizer prior to initial stack testing. After the initial stack test has been completed, the six minute average temperature shall be equal to, or greater than the respective hourly average maintained during the most recent satisfactory stack testing required by Special Condition No. 9.
 - C. The thermal oxidizer exhaust temperature shall be continuously monitored and recorded when waste gas is directed to the oxidizer. The temperature measurement device shall reduce the temperature readings to an averaging period of 6 minutes or less and record it at that frequency. The temperature measurement device shall be installed, calibrated, and maintained according to accepted practice and the manufacturer's specifications. The device shall have an accuracy of the greater of ± 0.75 percent of the temperature being measured expressed in degrees Celsius or $\pm 2.5^\circ\text{C}$.

Quality assured (or valid) data must be generated when the thermal oxidizer is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the

time (in minutes) that the thermal oxidizer operated over the previous rolling 12 month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

- D. The oxygen analyzer used to satisfy this Special Condition shall continuously monitor and record oxygen concentration when waste gas is directed to the oxidizer. It shall reduce the oxygen readings to an averaging period of 6 minutes or less and record it at that frequency.

The oxygen analyzer shall be zeroed and spanned daily and corrective action taken when the 24-hour span drift exceeds two times the amounts specified Performance Specification No. 3, 40 CFR Part 60, Appendix B. Zero and span is not required on weekends and plant holidays if instrument technicians are not normally scheduled on those days.

The analyzer shall be quality-assured at least semiannually using cylinder gas audits (CGAs) in accordance with 40 CFR Part 60, Appendix F, Procedure 1, § 5.1.2, with the following exception: a relative accuracy test audit is not required once every four quarters (i.e., two successive semiannual CGAs may be conducted). An equivalent quality-assurance method approved by the TCEQ may also be used. Successive semiannual audits shall occur no closer than four months. Necessary corrective action shall be taken for all CGA exceedances of ± 15 percent accuracy and any continuous emissions monitoring system downtime in excess of 5 percent of the incinerator operating time. These occurrences and corrective actions shall be reported to the appropriate TCEQ Regional Director on a quarterly basis. Supplemental stack concentration measurements may be required at the discretion of the appropriate TCEQ Regional Director.

Quality assured (or valid) data must be generated when the thermal oxidizer is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the thermal oxidizer operated over the previous rolling 12 month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

7. The following requirements shall apply to Thermal Oxidizer 2 (EPN EP3-1).
- A. Thermal Oxidizer 2 (EPN EP3-1), shall maintain the VOC concentration in the exhaust gas less than 10 ppmv on a dry basis, corrected to 3 percent oxygen, or achieve a VOC destruction efficiency greater than 99.9 percent.
 - B. The thermal oxidizer firebox exit temperature shall be maintained at not less than 2000°C and exhaust oxygen concentration not less than 3 percent on a six-minute average while waste gas is being fed into the oxidizer prior to initial stack testing. After the initial stack test has been completed, the six minute average temperature shall be equal to, or greater than the respective hourly average maintained during the most recent satisfactory stack testing required by Special Condition No. 9.
 - C. The thermal oxidizer exhaust temperature shall be continuously monitored and recorded when waste gas is directed to the oxidizer. The temperature measurement device shall reduce the temperature readings to an averaging period of 6 minutes or less and record it at that frequency. The temperature measurement device shall be installed, calibrated, and maintained according to accepted practice and the manufacturer's specifications. The device

shall have an accuracy of the greater of ± 0.75 percent of the temperature being measured expressed in degrees Celsius or $\pm 2.5^\circ\text{C}$.

Quality assured (or valid) data must be generated when the thermal oxidizer is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the thermal oxidizer operated over the previous rolling 12 month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

- D. The oxygen analyzer used to satisfy this Special Condition shall continuously monitor and record oxygen concentration when waste gas is directed to the oxidizer. It shall reduce the oxygen readings to an averaging period of 6 minutes or less and record it at that frequency.

The oxygen analyzer shall be zeroed and spanned daily and corrective action taken when the 24-hour span drift exceeds two times the amounts specified Performance Specification No. 3, 40 CFR Part 60, Appendix B. Zero and span is not required on weekends and plant holidays if instrument technicians are not normally scheduled on those days.

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Quality assured (or valid) data must be generated when the thermal oxidizer is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the thermal oxidizer operated over the previous rolling 12 month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

Fugitives

Piping, Valves, Pumps, and Compressors in contact with Hydrogen Fluoride - 28AVO

8. Except as may be provided for in the Special Conditions of this permit, the following requirements apply to the above-referenced equipment:
- A. Audio, olfactory, and visual checks for leaks within the operating area shall be made every four hours.

- B. Immediately, but no later than one hour upon detection of a leak, plant personnel shall take at least one of the following actions:
- (1) Isolate the leak.
 - (2) Commence repair or replacement of the leaking component.
 - (3) Use a leak collection/containment system to prevent the leak until repair or replacement can be made if immediate repair is not possible.

Date and time of each inspection shall be noted in the operator's log or equivalent. Records shall be maintained at the plant site of all repairs and replacements made due to leaks. These records shall be made available to representatives of the Texas Commission on Environmental Quality (TCEQ) upon request.

Initial Determination of Compliance

9. The permit holder shall perform stack sampling and other testing as required to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere from the thermal oxidizers to demonstrate compliance with the MAERT and Special Condition Nos. 6.A. and 7.A. The permit holder is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense. Sampling shall be conducted in accordance with the appropriate procedures of the Texas Commission on Environmental Quality (TCEQ) Sampling Procedures Manual and the U.S. Environmental Protection Agency (EPA) Reference Methods.

Requests to waive testing for any pollutant specified in this condition shall be submitted to the TCEQ Office of Air, Air Permits Division. Test waivers and alternate/equivalent procedure proposals for Title 40 Code of Federal Regulation Part 60 (40 CFR Part 60) testing which must have EPA approval shall be submitted to the TCEQ Regional Director.

- A. The appropriate TCEQ Regional Office shall be notified not less than 45 days prior to sampling. The notice shall include:
- (1) Proposed date for pretest meeting.
 - (2) Date sampling will occur.
 - (3) Name of firm conducting sampling.
 - (4) Type of sampling equipment to be used.
 - (5) Method or procedure to be used in sampling.
 - (6) Description of any proposed deviation from the sampling procedures specified in this permit or TCEQ/EPA sampling procedures.
 - (7) Procedure/parameters to be used to determine worst case emissions.

The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for the test reports. The TCEQ Regional Director must approve any deviation from specified sampling procedures.

- B. Air contaminants emitted from the thermal oxidizers to be tested for include (but are not limited to) VOC.

- C. Sampling shall occur within 60 days after achieving the maximum operating rate, but no later than 180 days after initial start-up of the facilities (or increase in production, as appropriate) and at such other times (identify the need for any periodic sampling here) as may be required by the TCEQ Executive Director. Requests for additional time to perform sampling shall be submitted to the appropriate regional office.
- D. The facility being sampled shall operate at maximum production during stack emission testing. These conditions/parameters and any other primary operating parameters that affect the emission rate shall be monitored and recorded during the stack test. Any additional parameters shall be determined at the pretest meeting and shall be stated in the sampling report. Permit conditions and parameter limits may be waived during stack testing performed under this condition if the proposed condition/parameter range is identified in the test notice specified in paragraph A and accepted by the TCEQ Regional Office. Permit allowable emissions and emission control requirements are not waived and still apply during stack testing periods.
- During subsequent operations, if the production is greater than that recorded during the test period, stack sampling shall be performed at the new operating conditions within 120 days. This sampling may be waived by the TCEQ Air Section Manager for the region.
- E. Copies of the final sampling report shall be forwarded to the offices below within 60 days after sampling is completed. Sampling reports shall comply with the attached provisions entitled "Chapter 14, Contents of Sampling Reports" of the TCEQ Sampling Procedures Manual. The reports shall be distributed as follows:
- One copy to the appropriate TCEQ Regional Office.
One copy to each local air pollution control program.
- F. Sampling ports and platform(s) shall be incorporated into the design of (source stack and EPN) according to the specifications set forth in the attachment entitled "Chapter 2, Guidelines for Stack Sampling Facilities" of the Texas Commission on Environmental Quality (TCEQ) Sampling Procedures Manual. Alternate sampling facility designs must be submitted for approval to the TCEQ Regional Director.

Disaster Review

10. The holder of this permit shall comply with EPA regulations on Chemical Accident Prevention Provisions promulgated in 40 CFR Part 68. The Risk Management Plan (RMP) shall be submitted to the TCEQ Office of Air, Air Permits Division prior to the date this site first exceeds a threshold quantity of hydrogen fluoride.

Chemical Flexibility

11. Except as provided for below, the use of compounds at the Exflor Research Corporation facility is limited to those identified in the permit application, PI-1 dated, July 7, 2021 (including subsequent submittals made during the permit application review process). New compounds may be added through the use of the procedure below, 30 TAC Chapter 106, or 30 TAC Chapter 116.
- A. Short-term (pounds per hour [lb/hr]) and annual (TPY) emissions and calculations shall be completed for each chemical at each affected source. Emission rates (ER) shall be calculated with the methods documented in the permit application PI-1 dated, July 7, 2021.

The calculated ER shall not exceed the maximum allowable emissions rate at any emission point.

- B. The Effect Screening Level (ESL) for the compound shall be obtained from the current TCEQ ESL list or by written request to the TCEQ Toxicology Section.
- C. The new compounds or chemicals shall serve the same basic function and the emissions shall be from the same location as the emissions from the current materials.
- D. All the compounds within a new mixture are known, i.e. the weight percentages of the ingredients add to 100 percent or more.
- E. Any air contaminant compound in a new mixture is exempt from the requirements of subparagraph F. below if it meets one of the following conditions:
 - (1) It is emitted at a rate and has a short-term Effects Screening Level (ESL) as stated in the following table; or

Emission Rate (lbs/hr)	Short-term ESL ($\mu\text{g}/\text{m}_3$)
≤ 0.04	≥ 2 & < 500
≤ 0.10	≥ 500 & $< 3,500$
≤ 0.40	$\geq 3,500$

- (2) It has a true vapor pressure at 68°F of less than 0.01 mm Hg.
- F. For all other new or increased air contaminants the following procedure shall be completed:
 - (1) Determine the emission rate (ER) of each air contaminant ingredient including emissions of the same air contaminant from currently authorized materials that may be emitted at the same time from each emission point.
 - (2) Multiply the emission rate of the air contaminant by the unit impact multiplier for each emission point from the following table to determine the off-property impact (Ground Level Concentration (GLC)) for each emission point.

Emission Point	Unit Impact ($\mu\text{g}/\text{m}_3$ per lb/hr)
EP3-1	415.37
EP3-2	56.87
EP3-3	57.54
FUG3-1	37.36
FUG3-2	57.59
FUG3-3	55.58
FUG3-4	55.87

- (3) Sum the impacts from each emission point/emission point group to determine a total off- property impact (Total GLC_{MAX}) for the new or increased air contaminant.
- (4) Compare the total off-property impact to the ESL for the air contaminant as

follows: $\text{Total GLC}_{\text{MAX}} \leq \text{ESL}_{\text{NEW}}$

Where:

$\text{Total GLC}_{\text{MAX}}$ = the sum of the GLCs from each emission point.

ESL_{new} = short-term ESL of new ingredient air contaminant from the most current ESL list published by the TCEQ or as specifically derived by TCEQ Toxicology Section. The ESL shall be obtained in writing prior to the use of the new or increased air contaminant.

- G. Short-term emission rates from new or increased air contaminants shall not cause any increases in air contaminant category annual emission rates as listed on the maximum allowable emission rates table (MAERT).
- H. The permit holder shall maintain records of the information below and the demonstrations in steps A through C above. The following documentation is required for each compound:
- (1) Chemical name(s), composition, and chemical abstract registry number if available.
 - (2) True vapor pressure at maximum hourly and annual average storage temperature.
 - (3) Molecular weight.
 - (4) Storage tanks, loading areas, and fugitive areas where the material is to be handled and the emission control device to be utilized.
 - (5) Date new compound handling commenced.
 - (6) Material Safety Data Sheet.
 - (7) Maximum concentration of the chemical in mole percent (or in weight percent for fugitive areas) in the affected facilities

Permit by Rule

12. The following sources and/or activities are authorized under a Permit by Rule (PBR) by Title 30 Texas Administrative Code Chapter 106 (30 TAC Chapter 106). These lists are not intended to be all inclusive and can be altered without modifications to this permit.

Authorization	Source or Activity
30 TAC § 106.263 (effective 11/01/01)	Routine Facility Maintenance

Date: _____ TBD _____

Emission Sources - Maximum Allowable Emission Rates

Permit Number 165848

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities, sources, and related activities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

Air Contaminants Data

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lbs/hour	TPY (4)
EP3-1	Exhaust Gas Vent System, Thermal Oxidizer 1, and Thermal Oxidizer 2	VOC	0.16	0.14
		NO _x	0.03	0.13
		CO	0.04	0.18
		PM	<0.01	0.02
		PM ₁₀	<0.01	0.02
		PM _{2.5}	<0.01	0.02
		HF	<0.01	0.03
		HCl	0.02	0.09
		F ₂	<0.01	<0.01
		Br ₂	<0.01	<0.01
		HBr	<0.01	<0.01
	Exempt organic compounds	1.05	4.40	
EP3-2	Washing Reactor 1	VOC	0.73	0.20
EP3-3	Washing Reactor 2	VOC	0.98	0.27
EP3-4	Water Reservoir	VOC	< 0.01	0.02
FUG3-1	Building 3 Fugitives (5)	VOC	1.75	7.67
		HF	0.13	0.56
		F ₂	0.10	0.45
		Br ₂	0.14	0.60
		H ₂	0.06	0.26
			Exempt organic compounds	1.65
FUG3-2	Reduction Reactor 1 Fugitives (5)	VOC	0.03	0.13
		HCl	0.01	0.03

Construction Permit Source Analysis & Technical Review

Company	Exflur Research Corporation	Permit Number	165848
City	Florence	Project Number	331049
County	Williamson	Regulated Entity Number	RN110969227
Project Type	Initial	Customer Reference Number	CN602696791
Project Reviewer	Cara Hill	Received Date	July 9, 2021
Site Name	Exflur Research		

Project Overview

Exflur Research Corporation (Exflur) submitted an initial expedited permit application proposing to construct a new specialty manufacturing facility located near Florence, Williamson County. The proposed facility will produce a variety of perfluorocarbons. Maintenance, Startup, and Shutdown (MSS) activities will be authorized by Permit by Rule (PBR) 106.263.

Exflur Research Corporation is proposing to build a new specialty manufacturing facility that will produce a variety of perfluorocarbons.

Emission Summary

Air Contaminant	Proposed Allowable Emission Rates (tpy)
PM	0.02
PM ₁₀	0.02
PM _{2.5}	0.02
VOC	8.79
NO _x	0.13
CO	0.18
Fluoride	20.18

Compliance History Evaluation - 30 TAC Chapter 60 Rules

A compliance history report was reviewed on:	July 14, 2021
Site rating & classification:	N/A
Company rating & classification:	3.31 / Satisfactory
Has the permit changed on the basis of the compliance history or rating?	No
Did the Regional Office have any comments? If so, explain.	No

Public Notice Information

Requirement	Date
Legislator letters mailed	7/14/2021
Date 1 st notice published	07/28/2021
Publication Name: <i>Williamson County Sun</i>	
Pollutants: hydrogen fluorides, carbon monoxide, hazardous air pollutants, nitrogen oxides and organic compounds	
Date 1 st notice Alternate Language published	07/29/2021

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Requirement	Date
Publication Name (Alternate Language): <i>El Mundo</i>	
1 st public notice tearsheet(s) received	08/05/2021
1 st public notice affidavit(s) received	08/05/2021
1 st public notice certification of sign posting/application availability received	09/07/2021
SB709 Notification mailed	7/14/2021 (re-notice 2/17/2022)
Date 2 nd notice published	
Publication Name:	
Pollutants:	
Date 2 nd notice published (Alternate Language)	
Publication Name (Alternate Language):	
2 nd public notice tearsheet(s) received	
2 nd public notice affidavit(s) received	
2 nd public notice certification of sign posting/application availability received	

Public Interest

Number of comments received	
Number of meeting requests received	
Number of hearing requests received	
Date meeting held	
Date response to comments filed with OCC	
Date of SOAH hearing	

Federal Rules Applicability

Requirement	
Subject to NSPS?	No
Subparts N/A	
Subject to NESHAP?	No
Subparts N/A	
Subject to NESHAP (MACT) for source categories?	No
Subparts N/A	

Nonattainment review applicability:

The manufacturing plant is located in Williamson County, which is classified as attainment for all criteria pollutants. Nonattainment review is not applicable.

Construction Permit Source Analysis & Technical Review

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Regulated Entity No. RN110969227

Requirement

PSD review applicability:

The manufacturing plant is located in Williamson County, which is classified as attainment for all criteria pollutants. The plant is a named source and has a potential to emit (PTE) less than 100 tpy for all pollutants. PSD review is not applicable.

Title V Applicability - 30 TAC Chapter 122 Rules

Requirement

Title V applicability:

The site is a minor source and not subject to the Title V program.

Periodic Monitoring (PM) applicability:

This site is a minor source and is not subject to 40 CFR 70 periodic monitoring requirements; however, the following monitoring requirements apply.

- Continuous monitoring of temperature and oxygen for the thermal oxidizer.
- Implementation of the 28AVO monitoring program.

Compliance Assurance Monitoring (CAM) applicability:

CAM is not applicable because the site is not a major source.

Process Description

Exflur facility consists of 1 large warehouse building that includes office space and laboratories situated on over 36 acres. Exflur will produce a variety of specialty fluorocarbons by a fluorination process. Various hydrocarbons are slowly reacted with fluorine (F₂) gas in a stirred fluorine-inert solvent. The resulting products are typically purified by distillation to give the perfluorinated (completely fluorinated) products. The fluorine gas used in making the products is generated onsite. The detailed process description is considered confidential and is provided in the separate confidential part of the permit application.

Project Scope

Exflur is requesting authorization for a new facility that will produce a variety of perfluorocarbons. A summary of the draft permit requirements, including control, monitoring, recordkeeping and reporting requirements, is given below.

SC No.	Comment
1	Incorporates MAERT and limits scope of authorization to sources listed on MAERT.
2	Generic prohibition on releases from uncontrolled process vents, limits on permit holder's ability to claim affirmative defense under 30 TAC Chap. 101 for releases from pressure relief devices.
3	Required control of process vents.
4	Production limitations.
5	Fuel specification.
6-7	Operational requirements for thermal oxidizers, including continuous parametric monitoring requirements.
8	Required LDAR program.
9	Stack sampling requirements.
10	RMP requirements
11	Chemical flexibility requirements.
12	Permit by rule incorporated by reference

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Best Available Control Technology

EPN	Source Name	Best Available Control Technology Description
EP3-1	Thermal Oxidizer 1	The thermal oxidizer must achieve 99.9% destruction efficiency. This is to be demonstrated through initial stack sampling and by maintaining the firebox temperature at or above the temperature demonstrated during the stack test (6-minute average) during subsequent operations. Prior to the initial stack test, the firebox temperature must be maintained at or above 2000°C. Collateral NO _x emissions are limited to 0.06 lb/MMBtu, based on the higher heating value of the waste gas.
EP3-1	Thermal Oxidizer 2	The thermal oxidizer must achieve 99.9% destruction efficiency. This is to be demonstrated through initial stack sampling and by maintaining the firebox temperature at or above the temperature demonstrated during the stack test (6-minute average) during subsequent operations. Prior to the initial stack test, the firebox temperature must be maintained at or above 2000°C. Collateral NO _x emissions are limited to 0.06 lb/MMBtu, based on the higher heating value of the waste gas.
EP3-1	Process Vents	Process vents other than EPN EP3-2 and EPN EP3-3 will be routed to one of the thermal oxidizers.
EP3-2	Washing Reactor 1	Process vent are uncontrolled and are limited in time, duration, and/or concentration of vent stream.
EP3-3	Washing Reactor 2	
EP3-4	Water Reservoir	
FUG3-1	Building 3 Fugitives	Uncontrolled sitewide VOC fugitives are less than 10 tpy. Monitoring of components in HF service are monitored with the 28 AVO program.
FUG3-2	Reduction Reactor 1 Fugitives	
FUG3-3	Reduction Reactor 2 Fugitives	
FUG3-4	Reduction Reactor 3 Fugitives	
FUG3-5	Solvent Strip Column 3 Fugitives	

Permits Incorporation

Permit by Rule (PBR) / Standard Permit / Permit Nos.	Description (include affected EPNs)	Action (Reference / Consolidate / Void)
N/A	N/A	N/A

Impacts Evaluation

Was modeling conducted? Yes	Type of Modeling: AERMOD	
Is the site within 3,000 feet of any school?		No
Additional site/land use information: N/A		

Air dispersion modeling was performed by the applicant to evaluate total air emissions from the proposed plant. Based on the results of the dispersion model, emissions from the site are not expected to result in a violation of any state or national ambient air quality standard. Emissions of non-criterial air contaminants are not expected to create adverse impacts to public health. The air dispersion modeling demonstration was audited by the TCEQ Air Dispersion Modeling Team and approved. The results are summarized in a memo dated November 18, 2021 (WCC Content ID 5843027).

**Construction Permit
Source Analysis & Technical Review**

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Project Reviewer	Date	Team Leader	Date
Cara Hill		Joel Stanford	

TCEQ Interoffice Memorandum

To: Cara Hill
Mechanical/Coatings Section

Thru: Chad Dumas, Team Leader
Air Dispersion Modeling Team (ADMT)

From: Ahmed Omar, P.E.
ADMT

Date: November 18, 2021

Subject: Air Quality Analysis Audit – Exflur Research Corporation (RN110969227)

1. Project Identification Information

Permit Application Number: 165848

NSR Project Number: 331049

ADMT Project Number: 7632

County: Williamson

Published Map: [\tceq4avmgisdata\GISWRK\APD\MODEL PROJECTS\7632\7632.pdf](#)

Air Quality Analysis: Submitted by Waid Environmental, October 2021, on behalf of Exflur Research Corporation. Additional information was provided November 2021.

2. Report Summary

The air quality analysis is acceptable for all review types and pollutants. The results are summarized below.

A. Minor Source NSR and Air Toxics Analysis

Table 1. Modeling Results for Minor NSR De Minimis

Pollutant	Averaging Time	GLCmax ($\mu\text{g}/\text{m}^3$)	De Minimis ($\mu\text{g}/\text{m}^3$)
PM ₁₀	24-hr	0.1	5
PM _{2.5}	24-hr	0.1	1.2
PM _{2.5}	Annual	0.01	0.2
NO ₂	1-hr	7	7.5
NO ₂	Annual	0.1	1
CO	1-hr	10	2000
CO	8-hr	3	500

The GLCmax are the maximum predicted concentrations associated with one year of meteorological data.

TCEQ Interoffice Memorandum

Generic modeling was used for the above analyses; refer to section 3 for more details on the generic modeling.

The justification for selecting the EPA's interim 1-hr NO₂ De Minimis level was based on the assumptions underlying EPA's development of the 1-hr NO₂ De Minimis level. As explained in EPA guidance memoranda¹, the EPA believes it is reasonable as an interim approach to use a De Minimis level that represents 4% of the 1-hr NO₂ NAAQS.

The PM_{2.5} De Minimis levels are the EPA recommended De Minimis levels. The use of the EPA recommended De Minimis levels is sufficient to conclude that a proposed source will not cause or contribute to a violation of a PM_{2.5} NAAQS based on the analyses documented in EPA guidance and policy memorandums².

To evaluate secondary PM_{2.5} impacts, the applicant provided an analysis based on a Tier 1 demonstration approach consistent with the EPA's Guideline on Air Quality Models. Specifically, the applicant used a Tier 1 demonstration tool developed by the EPA referred to as Modeled Emission Rates for Precursors (MERPs). The basic idea behind the MERPs is to use technically credible air quality modeling to relate precursor emissions and peak secondary pollutants impacts from a source. Using data associated with the worst-case source, the applicant estimated 24-hr and annual secondary PM_{2.5} concentrations of 0.0001 µg/m³ and <0.0001 µg/m³, respectively. When these estimates are added to the GLCmax listed in the table above, the results are less than the De Minimis levels.

Table 2. Minor NSR Site-wide Modeling Results for Health Effects

Pollutant	CAS#	Averaging Time	GLCmax (µg/m ³)	GLCmax Location	GLCni (µg/m ³)	GLCni Location
hydrogen fluoride	7664-39-3	1-hr	6	-	<6	-
hydrogen fluoride For air permit reviews in agricultural areas	7664-39-3	1-hr	3.9	Eastern Property Line	-	-
hydrogen fluoride For air permit reviews in agricultural areas with cattle	7664-39-3	Annual	0.3	-	-	-
fluorine	7782-41-4	1-hr	3.9	Western Property Line	3.9	Western Property Line
perfluoroheptane	335-57-9	1-hr	22	-	<22	-
methanol	67-56-1	1-hr	38	-	<38	-
perfluorooctanoic acid and its inorganic salts	335-67-1	1-hr	<0.01	-	<0.01	-
bromine	7726-95-6	1-hr	5	-	<5	-
hydrogen chloride	7647-01-0	1-hr	4	-	<4	-

¹ www.tceq.texas.gov/assets/public/permitting/air/memos/guidance_1hr_no2naaqs.pdf

² www.tceq.texas.gov/permitting/air/modeling/epa-mod-guidance.html

TCEQ Interoffice Memorandum

hydrogen chloride	7647-01-0	Annual	0.1	-	<0.1	-	7.9
carbon tetrafluoride	75-73-0	1-hr	154		<154	-	18000
Perfluoro (bis-2-chloroethoxy methane)	Not found	1-hr	7	-	<7	-	200
Perfluorodecalin	306-94-5	1-hr	22	-	<22	-	200
polymers of chlorotrifluoroethylene (PCTFE)	9002-83-9	1-hr	17	-	<17	-	50
carbonyl fluoride For air permit reviews in agricultural areas with cattle	353-50-4	Annual	0.03	-	<0.03	-	0.71
trifluoroacetic acid For air permit reviews in agricultural areas with cattle	76-05-1	Annual	0.03	-	<0.03	-	0.71

Table 3. Minor NSR Hours of Exceedance for Health Effects

Pollutant	Averaging Time	1 X ESL GLCni
fluorine	1-hr	99

For fluorine, the GLCmax and the GLCni are the same. Pollutant-specific modeling was conducted for fluorine and 1-hr hydrogen fluoride at agricultural areas. For all other pollutants and averaging times, generic modeling was used; refer to section 3 for more details on the generic modeling.

TCEQ Interoffice Memorandum

3. Model Used and Modeling Techniques

AERMOD (Version 21112) was used in a refined screening mode.

A unitized emission rate of 1 lb/hr was used to predict a generic short-term and long-term impact for each source. The generic impact was multiplied by the proposed pollutant specific emission rates to calculate a maximum predicted concentration for each source. The maximum predicted concentration for each source was summed to get a total predicted concentration for each pollutant. Pollutant-specific modeling was conducted for fluorine and 1-hr hydrogen fluoride at agricultural areas.

A. Land Use

Medium roughness and elevated terrain were used in the modeling analysis. These selections are consistent with the AERSURFACE analysis, topographic map, DEMs, and aerial photography. The selection of medium roughness is reasonable.

B. Meteorological Data

Surface Station and ID: Austin, TX (Station #: 13904)
Upper Air Station and ID: Fort Worth, TX (Station #: 3990)
Meteorological Dataset: 2016
Profile Base Elevation: 150.9 meters

C. Receptor Grid

The grid modeled was sufficient in density and spatial coverage to capture representative maximum ground-level concentrations.

D. Building Wake Effects (Downwash)

Input data to Building Profile Input Program Prime (Version 04274) are consistent with the aerial photography, plot plan, and modeling report.

4. Modeling Emissions Inventory

The modeled emission point and volume source parameters and rates were consistent with the modeling report. The source characterizations used to represent the sources were appropriate.

The applicant assumed full conversion of NO_x to NO₂, which is conservative.

Maximum allowable hourly emission rates were used for the short-term averaging time analyses, and annual average emission rates were used for the annual averaging time analyses.

H. Voluntary on-site compliance assessment dates:

N/A

I. Participation in a voluntary pollution reduction program:

N/A

J. Early compliance:

N/A

Sites Outside of Texas:

N/A