

CITY OF INGLESIDE
REGULAR PLANNING & ZONING COMMISSION MEETING
AGENDA
NOVEMBER 3, 2025
6:00 PM

Notice is hereby given that the Planning and Zoning Commission of the City of Ingleside, Texas, will conduct a meeting at City Hall, 2671 San Angelo Street, on November 3, 2025, at 6:00 PM. Overflow location will be held at Hildegard Schmidt Garden Center, 2740 Mustang Drive. Ingleside, Texas 78362.

Opening Agenda

1. Call Meeting to Order.
2. Roll Call.
3. Pledge of Allegiance.
4. Citizen Comments and Reports.

Public Hearing

The Planning & Zoning Commission shall call a public hearing on each item below in this section. Any person wishing to address the Commission on these items should please come forward when that public hearing is called.

5. Public Hearing regarding an application filed by Ingleside Clean Ammonia Partners, LLC (“ICAP”) requesting a Special Use Permit pursuant to Section 78-267 of the Code of Ordinance for the intensive use consisting of construction and operation of the Ingleside Blue Ammonia facility on property located at 1450 Lexington Blvd, further described in the legal description below:
 - Being the following described tracts of land: (1) 208.131 acres, more or less, out of a called 478.376-acre tract described in a deed, recorded in Volume 2081, Page 483, Deed Records, Nueces County, Texas and being part of the L. Von Zacharias Survey 1, Abstract 271 and being in San Patricio County, Texas, and being a portion of San Patricio Appraisal District Tax ID No. 67889, together with: (2) the piers, docks, bulkheads, wharves, and similar facilities and structures that are attached to said land (including the approximately 2.349 acres of dock and facilities being identified as San Patricio Appraisal District Tax ID No. 1021172) or that become attached to said land and extend into and over the waters of Corpus Christi Bay.

Regular Agenda

6. Deliberate and take appropriate action on the acceptance of the Regular Planning & Zoning Commission Minutes of October 13, 2025.
7. Deliberate and take appropriate action on an application filed by Ingleside Clean Ammonia Partners, LLC (“ICAP”) requesting a Special Use Permit pursuant to Section 78-267 of the

Code of Ordinance for the intensive use consisting of construction and operation of the Ingleside Blue Ammonia facility on property located at 1450 Lexington Blvd, further described in the legal description below:

- Being the following described tracts of land: (1) 208.131 acres, more or less, out of a called 478.376-acre tract described in a deed, recorded in Volume 2081, Page 483, Deed Records, Nueces County, Texas and being part of the L. Von Zacharias Survey 1, Abstract 271 and being in San Patricio County, Texas, and being a portion of San Patricio Appraisal District Tax ID No. 67889, together with: (2) the piers, docks, bulkheads, wharves, and similar facilities and structures that are attached to said land (including the approximately 2.349 acres of dock and facilities being identified as San Patricio Appraisal District Tax ID No. 1021172) or that become attached to said land and extend into and over the waters of Corpus Christi Bay.

Closing Agenda

8. Items to consider for placement on future agendas.
9. Adjourn.

Special Accommodations

This facility is wheelchair accessible and there are special parking spaces near the main entrance. A request for accommodation or special services must be made 48 hours prior to this meeting. Please contact City Secretary's Office at (361) 776-2517 or Fax (361) 776-1027 or email citycouncilquestions@inglesidetx.gov for further information.

Certification

I, Elisabeth Staton, certify that the above notice of this Regular Meeting of the Planning & Zoning Commission was posted on the City Hall bulletin board at 2671 San Angelo Street, Ingleside, Texas on Tuesday, October 28, 2025 by 10:30 a.m.



Elisabeth Staton
Assistant City Secretary

Notice of Potential Quorum

A quorum of City of Ingleside City Boards, Commissions, and/or Committees may be present at the Regular Meeting of the Planning & Zoning Commission on November 3, 2025, at 6:00 PM.

It is anticipated that members of other City Boards, Commissions, and/or Committees may attend the meeting in numbers that may constitute a quorum of the other City Boards, Commissions, and/or Committees. Notice is hereby given that this meeting, to the extent required by law, is also noticed as a meeting of the other City Boards, Commissions, and/or Committees of the City, whose members may be in attendance. The members of the City

Boards, Commissions, and/or Committees may participate in discussions on the items listed on this agenda, which occur at this meeting, but no action will be taken by those in attendance unless such action item is specifically listed on an agenda during a regular or special meeting for the respective Board, Commission, and/or Committee subject to the Texas Open Meetings Act.

This public notice was removed from the official posting board at the Ingleside City Hall on the following:

Date: _____

Time: _____

By: _____

City Secretary's Office
City of Ingleside, Texas

PLANNING & ZONING COMMISSION AGENDA

Regular Meeting: November 3, 2025

AGENDA ITEM: 5

Public Hearing regarding an application filed by Ingleside Clean Ammonia Partners, LLC ("ICAP") requesting a Special Use Permit pursuant to Section 78-267 of the Code of Ordinance for the intensive use consisting of construction and operation of the Ingleside Blue Ammonia facility on property located at 1450 Lexington Blvd, further described in the legal description below:

- Being the following described tracts of land: (1) 208.131 acres, more or less, out of a called 478.376-acre tract described in a deed, recorded in Volume 2081, Page 483, Deed Records, Nueces County, Texas and being part of the L. Von Zacharias Survey 1, Abstract 271 and being in San Patricio County, Texas, and being a portion of San Patricio Appraisal District Tax ID No. 67889, together with: (2) the piers, docks, bulkheads, wharves, and similar facilities and structures that are attached to said land (including the approximately 2.349 acres of dock and facilities being identified as San Patricio Appraisal District Tax ID No. 1021172) or that become attached to said land and extend into and over the waters of Corpus Christi Bay.

SUBMITTED BY: Bernard Rodriguez, Director of Development Services, Pamela Hawkins, Administrative Assistant

APPROVED FOR AGENDA: Jana Stork, Director of Administrative Services/City Secretary

BACKGROUND:

The applicant, Ingleside Clean Ammonia Partners, LLC ("ICAP") is requesting a Special Use Permit for approximately 208.131 – Acre Tract of land inside the corporate city limits of Ingleside, Texas. The property is currently zoned as I-Industrial District.

The proposed use is for. The Special Use Permit shall be limited to such use.

Notice of this public hearing was published in the Ingleside Index on October 16, 2025. Staff mailed out a Public Hearing Notice to 4 property owners, within a 400-foot radius, on October 23, 2025. Staff received no comments from property owners regarding the request at the time this report was prepared.

FISCAL ANALYSIS:

N/A

RECOMMENDATION:

Public Hearing.

ATTACHMENTS:

1. YaREN SUP Public Notifications



NOTICE OF PUBLIC HEARING

In accordance with the provisions of the City of Ingleside Code of Ordinances and the Texas State statutes, notice is hereby given that the public hearing previously scheduled to be held before the Planning and Zoning Commission on **Monday, October 20, 2025, at 6:00 pm** has been moved to **Monday, November 3, 2025 at 6:00 pm** and the City Council of the City of Ingleside on **Monday, November 10, 2025**. Both hearings will be held at the City of Ingleside City Hall, located at 2671 San Angelo Street, Ingleside, Texas, with overflow accommodations at the City of Ingleside Garden Center, located at 2740 Mustang Drive, Ingleside, Texas.

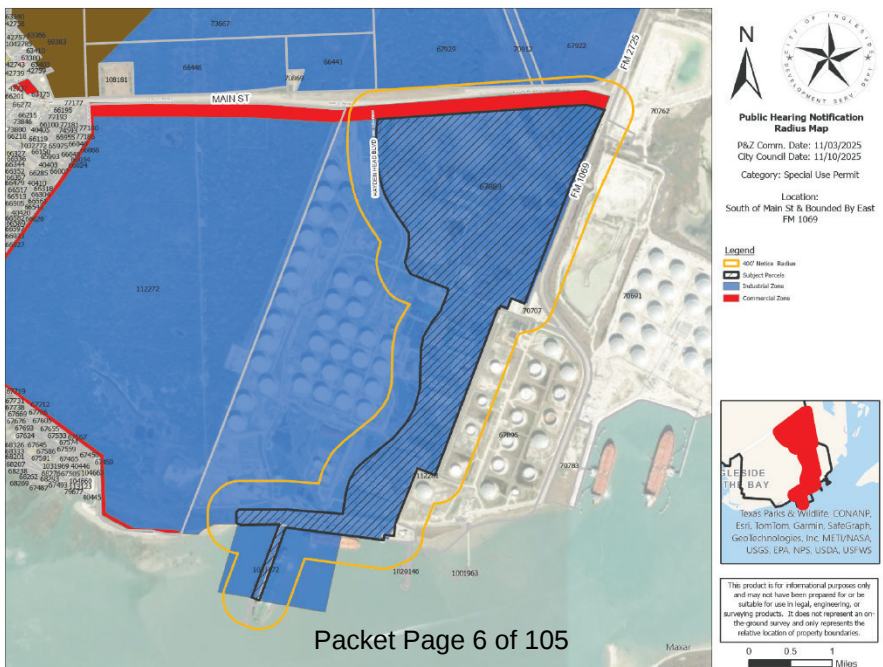
The Public Hearing is assembled to solicit comments from citizens and other interested parties concerning:

- An application filed by Ingleside Clean Ammonia Partners, LLC (“ICAP”) requesting a Special Use Permit pursuant to Section 78-267 of the Code of Ordinance for the intensive use consisting of construction and operation of the Ingleside Blue Ammonia facility on property located at 1450 Lexington Blvd, further described in the legal description below:
 - o Being the following described tracts of land: (1) 208.131 acres, more or less, out of a called 478.376-acre tract described in a deed, recorded in Volume 2081, Page 483, Deed Records, Nueces County, Texas and being part of the L. Von Zacharias Survey 1, Abstract 271 and being in San Patricio County, Texas, and being a portion of San Patricio Appraisal District Tax ID No. 67889, together with: (2) the piers, docks, bulkheads, wharves, and similar facilities and structures that are attached to said land (including the approximately 2.349 acres of dock and facilities being identified as San Patricio Appraisal District Tax ID No. 1021172) or that become attached to said land and extend into and over the waters of Corpus Christi Bay.

The property is geographically shown on the attached map.

Public comments can be submitted prior to the public hearing by emailing phawkins@inglesidtx.gov. Any questions concerning this matter should be directed to **Bernard Rodriguez**, Director of Development Services at **361-776-3815** or brodriguez@inglesidtx.gov.

Published one time in the *Ingleside Index* on **October 16, 2025**



Yaren Public Hearing Notice
Property Owner 400' Radius Notification
11/03/2025 - Planning & Zoning Commission
11/10/2025 - City Council

Applicant/Representatives

ENBRIDGE INGLESIDE OIL TERMINA
%PROPERTY TAX DEPARTMENT
5400 WESTHEIMER COURT
HOUSTON, TX 77056

ENBRIDGE INGLESIDE LPG TERMINA
%PROPERTY TAX DEPARTMENT
5400 WESTHEIMER COURT
HOUSTON, TX 77056

INGLESIDE CLEAN AMMONIA
PARTNERS, LLC
915 N ELDRIDGE PARKWAY SUITE 1100
HOUSTON, TX 77079

ENBRIDGE INGLESIDE OIL TERMINAL
LLC
915 N ELDRIDGE PKWY STE 1100
HOUSTON, TX 77079

Property Owners

SOUTH TEXAS GATEWAY TERMINAL
LLC
ATTN PROPERTY TAX
1201 LOUISIANA ST STE 3300
HOUSTON, TX 77002

ERF INGLESIDE INC
555 N CARANCAHUA SUITE 700
CORPUS CHRISTI, TX 78401

FLINT HILLS RESOURCES CORPUS
CHRISTI LLC
ATTN PROPERTY TAX DEPT
PO BOX 3755
WICHITA, KS 67201

FLINT HILLS RESOURCES INGLESIDE
LLC
PO BOX 2900
WICHITA, KS 67201

PLANNING & ZONING COMMISSION AGENDA
Regular Meeting: November 3, 2025

AGENDA ITEM: 6

Deliberate and take appropriate action on the acceptance of the Regular Planning & Zoning Commission Minutes of October 13, 2025.

SUBMITTED BY: Pamela Hawkins, Administrative Assistant

APPROVED FOR AGENDA: Jana Stork, Director of Administrative Services/City Secretary

BACKGROUND:

Please see the accompanying Regular Planning & Zoning Commission Minutes of October 13, 2025.

FISCAL ANALYSIS:

N/A

RECOMMENDATION:

Staff recommends the Commission approve the Minutes, as presented.

ATTACHMENTS:

1. 2025 10-13 PZ Minutes_DRAFT v2

**CITY OF INGLESIDE
REGULAR PLANNING & ZONING COMMISSION MEETING
MINUTES
OCTOBER 13, 2025**

Opening Agenda

1. Call Meeting to Order.

The Regular Planning & Zoning Commission Meeting of the City of Ingleside was called to order by Chairman Wilson at 6:00 p.m. on October 13, 2025, at City Hall, 2671 San Angelo Ave, Ingleside, TX, overflow at Garden Center, and live streaming video.

2. Roll Call.

With Commission Members present a quorum was established.

Commission Members Present: Alan Beaubien, Jacob Lopez, Connor Brown, Jeremy Long, Ricardo Trevino Jr, and Cynthia Wilson.

Commission Members Absent: None

3. Pledge of Allegiance.

Chairman Wilson led the Pledge of Allegiance to the U.S. flag.

4. Citizen Comments and Reports.

Dennis Peacock, 545 S. 10th St. Aransas Pass, addressed the Commission.

Public Hearing

5. Public Hearing regarding an application filed by Port of Texas, LP requesting a Special Use Permit pursuant to Section 78-267 of the Code of Ordinances for the intensive use consisting of crude oil storage tanks on property generally located South of Highway 361 and West of Coach Emory Bellard Dr and Avenue B, further described in the legal description below:

A combined total of 288.13 acres consisting of an 89.75 Acre Tract of land, as described in file number 728165 (filed Nov. 17, 2022), Deed of Records, San Patricio County, Texas and a 210.02 Acre Tract, being out of a 28.62 acre tract, a 1.61 acre tract, a 9.22 acre tract and a 5.54 acre tract as recorded in Volume 326, Page 475, Deed Records, San Patricio County, Texas; the remainder of a 50.91 acre tract as recorded in Volume 113 Page 182, Deed Records, San Patricio County, Texas; the remainder of a 48.18 acre tract as recorded in Volume 90, Page 553, Deed Records, San Patricio County, Texas; the remainder of a 46.81 acre tract, recorded in

Volume 149, Page 502, Deed Records, San Patricio County, Texas; a 4.54 acre tract as recorded in Volume 148, Page 514, Deed Records, San Patricio County, Texas; and an 8.93 acre tract as recorded in Volume 101, Page 391, Deed Records, San Patricio County, Texas and a 2.29 acre tract recorded in Volume 88, Page 15, Deed Records, San Patricio County, Texas.

At 6:06 p.m. Chairman Wilson convened the Planning and Zoning Commission into a Public Hearing.

Speaking For: Courtney Shane 2181 Capeheart

Speaking Against: Pat Cady 2522 San Angelo Ave

At 6:11 p.m. Chairman Wilson closed the Public Hearing and reconvened the Planning and Zoning Commission Meeting.

Regular Agenda

6. Deliberate and take appropriate action on the acceptance of the Regular Planning & Zoning Commission Minutes of September 2, 2025.

No discussion was held on this item.

Motion: Commission Member Trevino made a motion to approve the Regular Planning & Zoning Commission Minutes of September 2, 2025. Commission Member Brown seconded the motion. Motion carried with all present voting in favor.

7. Deliberate and take appropriate action regarding an application filed by Port of Texas, LP requesting a Special Use Permit pursuant to Section 78-267 of the Code of Ordinances for the intensive use consisting of crude oil storage tanks on property generally located South of Highway 361 and West of Coach Emory Bellard Dr and Avenue B, further described in the legal description below:

A combined total of 288.13 acres consisting of an 89.75 Acre Tract of land, as described in file number 728165 (filed Nov. 17, 2022), Deed of Records, San Patricio County, Texas and a 210.02 Acre Tract, being out of a 28.62 acre tract, a 1.61 acre tract, a 9.22 acre tract and a 5.54 acre tract as recorded in Volume 326, Page 475, Deed Records, San Patricio County, Texas; the remainder of a 50.91 acre tract as recorded in Volume 113 Page 182, Deed Records, San Patricio County, Texas; the remainder of a 48.18 acre tract as recorded in Volume 90, Page 553, Deed Records, San Patricio County, Texas; the remainder of a 46.81 acre tract, recorded in Volume 149, Page 502, Deed Records, San Patricio County, Texas; a 4.54 acre tract as recorded in Volume 148, Page 514, Deed Records, San Patricio County, Texas; and an 8.93 acre tract as recorded in Volume 101, Page 391, Deed Records, San Patricio County, Texas and a 2.29 acre tract recorded in Volume 88, Page 15, Deed Records, San Patricio County, Texas.

Discussion was held between Commission Members, the applicant, and Director of Development Services Bernard Rodriguez about the request coming before them previously, the industrial history of the property, the remediation done on the property, safety and security measures, and verification that the request is separate from the potential ammonia plant.

Kris Cady, 2522 San Angelo Ave, addressed the Commission.

Pat Cady, 2522 San Angelo Ave, addressed the Commission.

Motion: Commission Member Beaubien made a motion to recommend to City Council approval of the request for a Special Use Permit pursuant to Section 78-267 of the Code of Ordinances for the intensive use consisting of crude oil storage tanks on the property described above. Commission Member Long seconded the motion. Motion carried 4:2.

For Motion: Commission Member Beaubien, Commission Member Lopez, Commission Member Brown, Commission Member Long

Against Motion: Commission Member Trevino Jr., Chairman Wilson

Closing Agenda

8. Items to consider for placement on future agendas.

Discussion was held between Commission Members, Director of Development Services Rodriguez, and City Manager Brenton Lewis about filling the open Commission position.

9. Adjourn.

Chairman Wilson adjourned the Regular Meeting of the Planning and Zoning Commission at 6:51 p.m.

APPROVED:

Cynthia Wilson, Commission Chair

ATTEST:

Elisabeth Staton, Assistant City Secretary

PLANNING & ZONING COMMISSION AGENDA

Regular Meeting: November 3, 2025

AGENDA ITEM: 7

Deliberate and take appropriate action on an application filed by Ingleside Clean Ammonia Partners, LLC ("ICAP") requesting a Special Use Permit pursuant to Section 78-267 of the Code of Ordinance for the intensive use consisting of construction and operation of the Ingleside Blue Ammonia facility on property located at 1450 Lexington Blvd, further described in the legal description below:

- Being the following described tracts of land: (1) 208.131 acres, more or less, out of a called 478.376-acre tract described in a deed, recorded in Volume 2081, Page 483, Deed Records, Nueces County, Texas and being part of the L. Von Zacharias Survey 1, Abstract 271 and being in San Patricio County, Texas, and being a portion of San Patricio Appraisal District Tax ID No. 67889, together with: (2) the piers, docks, bulkheads, wharves, and similar facilities and structures that are attached to said land (including the approximately 2.349 acres of dock and facilities being identified as San Patricio Appraisal District Tax ID No. 1021172) or that become attached to said land and extend into and over the waters of Corpus Christi Bay.

SUBMITTED BY: Bernard Rodriguez, Director of Development Services, Pamela Hawkins, Administrative Assistant

APPROVED FOR AGENDA: Jana Stork, Director of Administrative Services/City Secretary

BACKGROUND:

The applicant, Ingleside Clean Ammonia Partners ("ICAP") is requesting a Special Use Permit for approximately 208.131 – Acre Tract of land inside the corporate city limits of Ingleside, Texas. The property is currently zoned as I-Industrial District.

The proposed use is for the construction and operation of a Blue Ammonia facility. The Special Use Permit shall be limited to such use.

The property's current zoning map, future land use map, and master transportation plan were reviewed for compliance. The property surrounding the subject tract is zoned I-Industrial, other than a small commercial area between the site and FM 1069.

The Future Land Use map designates the area as Heavy Industrial (HI) use. Please note that the (HI) Heavy Industrial District designation was omitted from the official code of ordinance. However, due to the prior uses of the property and zoning of neighboring properties, an (I) Industrial District zone designation is the most suitable.

ICAP plans to construct and operate the Ingleside Blue Ammonia facility, known as Project YaREN, within the Enbridge Ingleside Energy Center. The facility will produce blue ammonia, a low-carbon alternative to traditional ammonia manufacturing methods.

FISCAL ANALYSIS:

N/A

RECOMMENDATION:

Staff recommends approval based on the application being administratively correct.

ATTACHMENTS:

1. 2025.10.07 - YaREN SUP Application and Supplement



PO Drawer 400 • 2665 San Angelo • Ingleside, TX. 78362

Phone: 361-776-3815 - building@inglesidetx.gov

ZONING AND PLATTING CHANGE REQUESTS

Permit#:

Site Address or Street Name: [1450 Lexington Blvd., Ingleside, TX](#)

Current Legal Description: Lot: Block: Subdivision:

Current Zoning: [Industrial](#)

Acreage: [210 Acres](#)

Project Type

☐ Zoning Change ☒ Special Permit ☒ Intensive Use ☐ Preliminary Plat ☐ Final Plat ☐ Replat
☐ Closure of Alley ☐ Closure of Public Way

Applicant Information

Name: [Ingleside Clean Ammonia Partners, LLC \("ICAP"\)](#)

Address: [915 N Eldridge Parkway, Suite 1100, Houston, TX 77079](#)

Phone Number: [1-855-385-6645](tel:1-855-385-6645) Email: EIECpermits@enbridge.com

Owner Information (if different)

Name: [Enbridge Ingleside Oil Terminal, LLC \(EIOT\)](#)

Address: [915 N Eldridge Parkway, Suite 1100, Houston, TX 77079](#)

Phone Number: [1-855-385-6645](tel:1-855-385-6645) Email: EIECpermits@enbridge.com (with a courtesy copy to legalnotices@enbridge.com)

Request

[Special Use Permit](#)

Floodplain

Is the project in a Floodplain? ☐ Yes ☒ No

Must include if applicable: ☒ Proposed Improvements ☐ Survey ☐ Plat
☒ Description of Proposed Uses ☒ Description of Hazards ☒ Description of All Safeguards
☒ Existing and proposed Landscaping/Barriers ☒ Site Plan

All documents are REQUIRED to be uploaded to CivicGov or submitted electronically for review to the Building Department for your project to be considered: building@inglesidetx.gov

Planning & Zoning Public Hearing: Monday,

Time: 6:00pm

City Council Public Hearing: Tuesday,

Time: 6:30pm

2nd Reading before City Council (if needed): Tuesday,

Time: 6:30pm

Signature of Applicant: _____

[Vince Paradis](#)
[Enbridge - Vice President](#)

Date: Sept 5, 2025

Signature of Owner: _____

[Vince Paradis](#)
[Enbridge - Vice President](#)

Date: Sept 5, 2025

Accepted By: _____

Date Accepted: 9/5/25

Filing Fee: \$11,000

Date Paid: 9/25/2025

Receipt #: 917940



PO Drawer 400 • 2665 San Angelo • Ingleside, TX 78362

Phone: 361-776-3815 - building@inglesidetx.gov

SPECIAL USE: SECTION 78-267 INTENSIVE USES

Date Filed: September 5, 2025

Rev. 2: October 7, 2025

In accordance with the Planning and Zoning Subdivision Ordinance, Chapter 78, Article IV, application for special use Section 78-267 is requested on the property below:

Applicant:

Name: Ingleside Clean Ammonia Partners, LLC ("ICAP")

Address: 915 N Eldridge Parkway, Suite 1100, Houston, TX 77079

Phone #: 1-855-385-6645

Email Address: EIECpermits@enbridge.com

Property Owner (if different)

Name: Enbridge Ingleside Oil Terminal, LLC (EIOT)

Address: 915 N Eldridge Parkway, Suite 1100, Houston, TX 77079

Phone #: 1-855-385-6645

Email Address: EIECpermits@enbridge.com (with a courtesy copy to legalnotices@enbridge.com)

Legal Description of Property:

Approximately 208.131 acres in San Patricio County, Texas (including a portion of San Patricio Appraisal District Tax ID No. 67889), together with the piers, docks, bulkheads, wharves, and similar facilities and structures that are attached to said land (including the approximately 2.349 acres of dock and facilities being identified as San Patricio Appraisal District Tax ID No. 1021172) or that become attached to said land and extend into and over the waters of Corpus Christi Bay, all as more particularly discussed in Section 1.2 of the attached report and as shown on Figure 2-1.

Description of proposed uses, approval for which the property is sought:

ICAP plans to construct and operate the Ingleside Blue Ammonia facility, known as Project YaREN, at the Enbridge Ingleside Energy Center. The facility will produce blue ammonia, a low-carbon alternative to traditional ammonia manufacturing methods. The production process involves two main steps: the manufacture of hydrogen-rich process gas using autothermal reforming (ATR) technology, followed by the combination of this hydrogen-rich gas with nitrogen to produce ammonia using the Haber-Bosch process. Siting Project YaREN within the Enbridge Ingleside Energy Center takes advantage of existing

industrial infrastructure and marine access. The produced ammonia will be stored in atmospheric, refrigerated tanks and, via a closed-loop system, loaded into marine vessels for delivery to customers. The facility will include a cooling water system that uses sea water, backup emergency generators, and an onsite wastewater treatment system. ICAP will also capture carbon dioxide during ammonia production, which a third party will transport to an offsite permanent sequestration facility, outside of San Patricio County. See Section 2 of the enclosed supplement for an expanded discussion of the proposed ammonia production uses.

Description of hazards, such as fire, explosion, noise vibration, dust, or the emission of smoke, odor, or toxic substances, accompanying the proposed use:

Sections 3.2 to 3.5 of the enclosed supplement discuss the various potential hazards that may accompany ammonia production, storage, and marine-loading uses of the site, followed by corresponding measures ICAP would implement to address those hazards. Potential hazards include the risk of fire and explosion given the presence of flammable and combustible materials (e.g., ammonia, natural gas, diesel fuel, hydrogen-rich process gas). Additionally, noise and vibration could occur from large equipment during construction (e.g., earth-moving equipment) and from facility components during operations (e.g., pumps, compressors, process vents, flares). Other potential hazards include the emission of odor and toxic substances during both routine operations (as permitted by the facility's air and water discharge permits) and non-routine/upset operations (e.g., a spill event). The combination of these hazards necessitates comprehensive safety measures to mitigate risks and protect human health and the environment.

Description of all safeguards proposed to protect the surrounding property and persons from hazards accompanying the proposed use:

To address the potential hazards associated with Project YaREN, ICAP will implement a series of robust safeguards. Section 3.1 of the enclosed supplement begins with an overview of ICAP's safety, health, and environmental philosophy, and the way that ICAP incorporates multiple layers of protection into its design and operations. Sections 3.2 through 3.5 then discuss myriad ways ICAP will incorporate control measures to safeguard against specific potential hazards that may accompany ammonia manufacturing, from several layers of engineering controls to contain flammable and combustible materials, to automated alarms, pressure relief valves, and gas detection systems that help identify and manage potential leaks and over-pressure situations so that the facility can be brought to a safe state in case of abnormal conditions. Sections 3.6 through 3.12 provide greater detail on administrative controls, engineering controls, and ICAP's adherence to various industry standards and codes, with each complementing ICAP's safeguards to ensure the safety of the facility's operations and the surrounding community.

A site plan showing the location of proposed improvements, landscaping, yard areas, sight and/or noise barriers, existing and planned, on the subject property.

See [Exhibit A](#)

Signature: _____

Vince Paradis
Enbridge - Vice President

Date: September 5, 2025

Zone: _____ Reviewed By: _____ Date: _____

Ingleside Clean Ammonia Partners, LLC
City of Ingleside Special Use Permit
Application Supplement for Project YaREN

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Exhibit A – Proposed Facility Layout

Exhibit B – Representative Safety Data Sheets (SDS)

Exhibit C – Federal & State Permits Authorizing Project YaREN and Related Projects

1 Executive Summary

Ingleside Clean Ammonia Partners, LLC (“ICAP”), a joint venture between Yara and Enbridge, is seeking a Special Use Permit for the construction and operation of the Ingleside Blue Ammonia plant (“Project YaREN”), to be located within the Enbridge Ingleside Energy Center, a site with a long-standing industrial history. ICAP has designed Project YaREN to produce “blue ammonia,” a low-carbon alternative to traditional ammonia, by integrating proven autothermal reforming (ATR) technology for hydrogen-rich process gas production with advanced carbon capture—with a third party transporting and permanently sequestering the carbon dioxide outside of San Patricio County. The ammonia produced will be stored in atmospheric, refrigerated tanks and exported via marine vessels.

ICAP’s approach to safety for Project YaREN is anchored in a comprehensive safety, health, and environmental philosophy that prioritizes the protection of both facility personnel and the surrounding community. The facility’s design and operations are structured around the federal Occupational Safety and Health Administration’s hierarchy of controls, which emphasizes multiple, redundant layers of protection. This hierarchy begins with the elimination of hazards where possible (e.g., ICAP’s decision not to store hydrogen-rich process gas onsite and to avoid the use of high-pressure truck or rail transport for ammonia). Where elimination is not feasible, ICAP has substituted safer materials and processes.

ICAP follows these with advanced engineering controls and facility design features. The ammonia storage tanks, for example, are double-walled and refrigerated at low pressure, exceeding industry code requirements to minimize the potential of ammonia escaping containment. The facility’s design incorporates automated safety instrumented systems that continuously monitor for abnormal conditions and can initiate safe shutdowns without operator intervention. Additional safeguards include pressure relief valves, gas detection systems, and automated alarms that provide early warning and facilitate quick response.

Beyond physical safeguards, ICAP employs extensive administrative controls to ensure ongoing safety. These will include a comprehensive Process Safety Management (PSM) program, detailed emergency response planning, and regular training for both employees and local first responders. The facility’s emergency response plan will be developed in collaboration with local authorities and will address a wide range of scenarios, including fires, releases, and natural disasters. The plan will incorporate clear communication protocols, evacuation procedures, and mutual aid agreements with neighboring emergency response teams. Regular drills and community engagement initiatives will ensure that both facility staff and the public are prepared and informed in the unlikely event of an incident.

Project YaREN’s safety measures are reinforced by strict adherence to federal and state regulatory requirements, as the facility is subject to rigorous federal and state permitting and oversight for air emissions, water discharges, and process safety. These measures, combined with a strong track record of safety in modern ammonia production, underscore ICAP’s commitment to protecting public health and safety through best-in-class design, operation, and community partnership.

Project YaREN represents a significant investment in safe, sustainable industrial development, with a strong commitment to community engagement, regulatory compliance, and environmental stewardship.

2 Project Summary

Ingleside Clean Ammonia Partners, LLC (“ICAP”) plans to build the Ingleside Blue Ammonia plant (“Project YaREN”) located at 1450 Lexington Blvd in Ingleside, San Patricio County, Texas. ICAP is a joint venture between Yara, a company with almost 100 years of domestic and international ammonia manufacturing experience, and Enbridge, a company with expertise in material storage, transfer, and marine export. Yara, with its extensive expertise in safely producing ammonia, will be the operator of the proposed ammonia production facility.

Project YaREN will be a blue ammonia production and storage operation that will deliver the produced ammonia to its customers via closed-loop loading into marine vessels at the site. Producing blue ammonia is an emerging low-

carbon alternative to traditional ammonia manufacturing methods. Blue ammonia production uses the traditional Haber-Bosch ammonia manufacturing chemistry and adds carbon dioxide (CO₂) capture, permanent sequestration, and storage technologies to reduce the carbon footprint of the operation. Ammonia produced at Project YaREN may be used by its customers as non-organic fertilizer, as a low-carbon fuel, or as a stable hydrogen carrier.

Project YaREN's location within the Enbridge Ingleside Energy Center ("EIEC") has been selected (1) for consistency with the other, similar existing uses of property in this industrially zoned area, (2) to make use of existing infrastructure, including dockage, security, and pipeline easements, and (3) to locate the manufacturing, storage, and marine loading components within the EIEC as remote from residences as possible.

ICAP has prepared this Special Use Permit ("SUP") application pursuant to City of Ingleside Ordinance Section 78-267 to the extent necessary to authorize ammonia manufacturing at the EIEC.

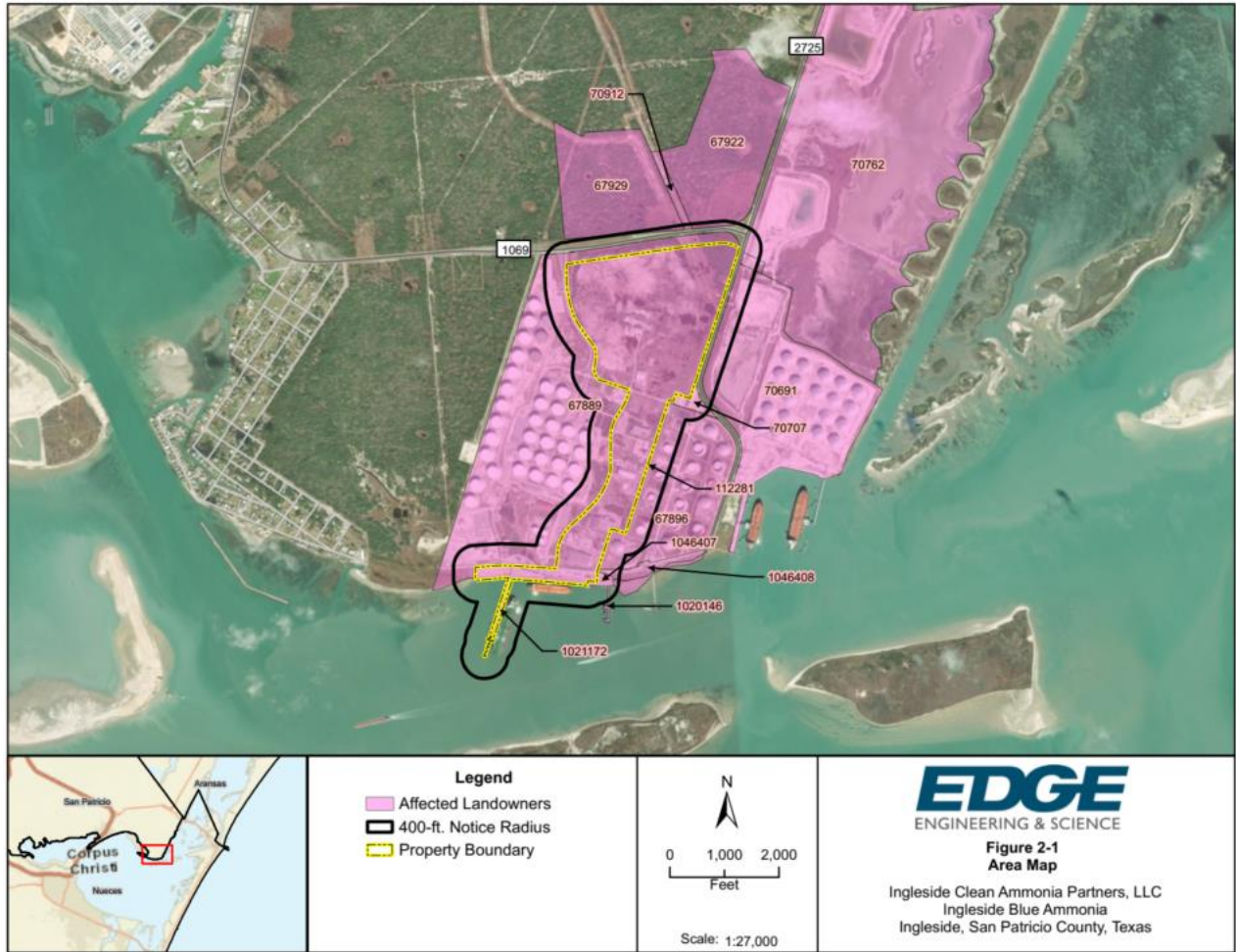
2.1 Site Description

Project YaREN will be situated within the EIEC, which has operated as an industrial site since 2015. EIEC has been zoned "Industrial (I)" by the City of Ingleside since July 10, 2012. Before becoming an industrial site, the EIEC tract was a U.S. naval station. EIEC is strategically located in Ingleside, Texas with substantial buffers of distance and vegetation from non-industrial uses. Siting Project YaREN in the EIEC provides pipeline connectivity as well as access to existing marine waterfront on the LaQuinta Channel, a federal navigation channel.

Legal Description is:

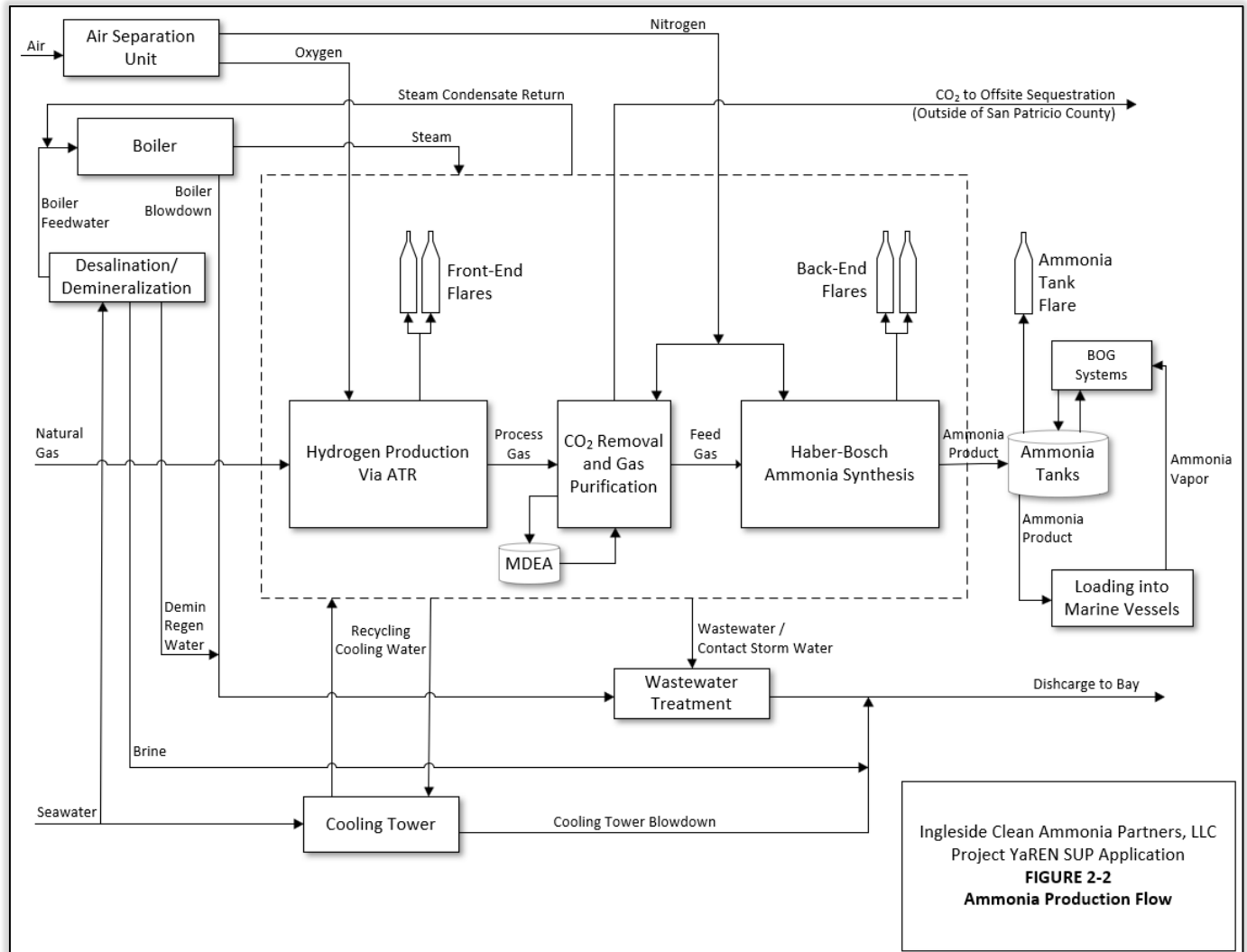
Being the following described tracts of land: (1) 208.131 acres, more or less, out of a called 478.376-acre tract described in a deed, recorded in Volume 2081, Page 483, Deed Records, Nueces County, Texas and being part of the L. Von Zacharias Survey 1, Abstract 271 and being in San Patricio County, Texas, and being a portion of San Patricio Appraisal District Tax ID No. 67889, together with: (2) the piers, docks, bulkheads, wharves, and similar facilities and structures that are attached to said land (including the approximately 2.349 acres of dock and facilities being identified as San Patricio Appraisal District Tax ID No. 1021172) or that become attached to said land and extend into and over the waters of Corpus Christi Bay.

Figure 2-1 provides an Area Map of the ammonia production facility in relation to EIEC's existing industrial operations and the surrounding area, along with the San Patricio Appraisal District Tax ID numbers for parcels within a 400-foot radius of the Project footprint. The current proposed Manufacturing Site Layout is provided in [Exhibit A](#).



2.2 Project YaREN Blue Ammonia Production

To make ammonia, ICAP first will manufacture hydrogen-rich process gas from natural gas using the proven autothermal reforming (ATR) technology and purify it by scrubbing out the CO₂ that is present in the hydrogen-rich stream (Step 1). This purified hydrogen-rich gas then will be combined with nitrogen to make ammonia using the well-established Haber-Bosch chemistry (Step 2). The ammonia production will be supported by utilities, storage, transfer piping, and marine loading into marine vessels. The ammonia product will be stored in atmospheric, refrigerated tanks, then be loaded into marine vessels for transport offsite. The removed CO₂ will be transported outside of San Patricio County via pipeline by a third-party for offsite permanent sequestration. Figure 2-2 illustrates the production flow through the manufacturing operations.



ICAP appreciates the community's concerns related to water use for this project. As represented in the Project's water discharge application, Texas Commission on Environmental Quality (TCEQ) Permit No. W0005473000¹, the Project will use seawater as its water source, with approximately 90% of it being used as-is in the recycling cooling water system, without requiring desalination or demineralization. The other 10% of the inlet seawater will be desalinated and demineralized for use in the boilers, which make steam for use in the manufacturing steps. There will be about 20-25% evaporation at the cooling towers, and approximately 5% of the total inlet stream will be discharged as desalination brine². Both this cooling tower evaporation and the small amount of brine produced by the desalination process will result in a combined discharge stream approximately 25-30% higher in salinity than naturally-occurring bay water. However, before discharge to the bay, this stream will be combined with freshwater, including treated water recovered from the manufacturing steps as well as rainwater collected in the onsite stormwater retention pond. Blending the freshwater into the discharge stream will reduce its salinity somewhat before ultimately returning to the bay. Finally, Project YaREN will carefully and slowly diffuse this water back into the bay so that it

¹ Available online at: <https://www.tceq.texas.gov/downloads/permitting/wastewater/title-iv/tpdes/wq0005473000-inglesidecleanammoniapartnersllc-inglesideblueammonia-sanpatricio-tpdes-adminpackage.pdf>

² Project YaREN's December 2024 Water Discharge Permit, Figure 3, Flow Balance Diagram contains additional details and proposed rates for each stream.

mixes well with existing bay waters. ICAP modeled 48 different diffusion scenarios using various discharge rates as well as historical actual seasonal water temperatures and salinities. The 50-year historical average salinity of Corpus Christi Bay in the vicinity of this project ranges from 25% to 39%³. As demonstrated in Project YaREN's wastewater discharge application, the combined discharge from this project is anticipated to increase bay salinity by less than 0.6% within 350 feet from the discharge point⁴ in all scenarios, with steadily decreasing salinity beyond this point. This less than 0.6% increase in salinity is much less than the historical 14% seasonal natural variability in the bay's salinity

The following sections provide additional process details for each of these main steps of ammonia production, as well as additional discussion regarding the supporting utilities, storage, and marine loading.

2.2.1 STEP 1: Front-End Hydrogen Production and Carbon Capture

The ammonia manufacturing process will include a front-end section that produces process gas containing hydrogen from natural gas feed and captures the CO₂ from the process streams, thus creating blue hydrogen. Hydrogen is needed later in the process to make ammonia.

To manufacture this hydrogen-rich stream, natural gas will be pretreated to remove sulfur compounds that may be present. Then, steam will be added, and these gases will be heated so that the two can mix, break apart, and reform to make "process gas," which is a mixture of mainly hydrogen, carbon monoxide (CO), and CO₂. Additional steam will be added to convert the CO to CO₂, which also will generate additional hydrogen. This manufacturing step is called autothermal reforming (ATR) and shift conversion, and it has been proven for use in the ammonia production process since the 1950s⁵.

At this stage, the process gas is composed mostly of hydrogen and CO₂. To capture the CO₂ from the stream so it can be removed from the site and permanently sequestered, or stored, the CO₂ must be scrubbed from the hydrogen. To accomplish this CO₂ capture, the CO₂/hydrogen stream will be treated with methyl diethanolamine (MDEA) in a closed-loop system⁶. MDEA is a chemical that absorbs CO₂ but not hydrogen, scrubbing the CO₂ from the process gas and leaving the hydrogen. The CO₂ is then removed from the MDEA, sent through an onsite compressor, and then to a third-party pipeline for transport to a permanent sequestration site outside of San Patricio County. The MDEA is recycled back to be re-used, without being vented to the atmosphere.

CO₂ will not be stored onsite. Rather, it will be transported to the storage site via a newly constructed dedicated underground pipeline. Under U.S. Department of Transportation ("USDOT") regulation, CO₂ pipelines must adhere to the same rigorous standards as those of other pipelines carrying various products such as crude oil and natural gas. This pipeline's operator must have an extensive and continuous monitoring system, including pressure data from sensors along the pipeline and at the storage location, as well as a robust quality assurance and pipeline integrity program. Transporting CO₂ by pipeline is safe and highly regulated and monitored.

During routine operations for the ammonia facility, there will be no front-end process venting to the flares. However, during maintenance, startup, and shutdown (MSS) operations, the production equipment will be vented to the front-end process flares to safely manage and dispose of vented gases in accordance with strict air permitting conditions, instead of routing these gases directly to the atmosphere. In the unlikely event abnormal venting occurs, such as a system overpressure or equipment malfunction, the flares also will safely manage such venting.

³ Project YaREN December 2024 Wastewater Permit Application, Attachment 2, Table 2.

⁴ Project YaREN December 2024 Wastewater Permit Application, Attachment 2, Tables 11 and 12.

⁵ K. Aasberg-Petersen, I. Dybkjær, C.V. Ovesen, N.C. Schjødt, J. Sehested, S.G. Thomsen, *Natural Gas to Synthesis Gas – Catalysts and Catalytic Processes*, *Journal of Natural Gas Science and Engineering*, Volume 3, Issue 2, 2011, Pages 423-459, Section 4.2. <https://www.sciencedirect.com/science/article/abs/pii/S1875510011000242>

⁶ MDEA will be purchased in bulk and stored onsite in a tank; ICAP will not manufacture MDEA at the Project YaREN site.

2.2.2 Step 2: Back-End Ammonia Production

In the second step of ammonia manufacturing, the nitrogen from the site's air separation unit and hydrogen-rich process gas from Step 1 will be compressed, mixed, and converted to ammonia in a fully-enclosed ammonia synthesis reactor system.

During routine operations, there will be no process emissions from the ammonia production step at the flares; however, during MSS operations, the ammonia production equipment will be vented to the back-end flares to safely manage and dispose of vented gases, again, in accordance with strict air permitting conditions. In the unlikely event abnormal venting occurs, such as a system overpressure or equipment malfunction, the flares also will safely manage such venting.

The produced ammonia will be chilled and sent to storage in any of four ammonia storage tanks prior to loading into marine vessels at the facility's wharf area. Each of these four storage tanks will be double walled, low pressure refrigerated tanks that maintain the ammonia below its boiling point, at approximately -27°F. The ammonia storage tanks will have a common boil-off gas (BOG) refrigeration system that will capture and control tank ammonia vapors that may be generated during normal and MSS operations. This BOG refrigeration system will compress and condense the ammonia vapors and return the liquid back to the tanks, providing closed-loop vapor control without venting to the atmosphere. The BOG system will include redundant units.

The ammonia marine loading operations also will incorporate a totally enclosed operation, which eliminates ammonia vapor venting during these activities. Both the onshore tanks and the marine vessels' tanks will be equipped with BOG systems, described above, which capture, compress, condense, and return the ammonia vapors to the tanks without venting ammonia to the atmosphere. Ammonia that may remain in the transfer system also will be returned safely to the refrigerated ammonia tanks by pushing it through the pipelines with nitrogen. The ammonia piping and loading arms will be designed specifically for and dedicated to cold ammonia transfers.

During routine operations, there will be no tank or loading operations vented to the ammonia storage flare; however, during MSS operations, the facility's air permit will require that ammonia vapor generated from storage tanks and vapors returned from the loading lines will be routed to the ammonia storage flare. In the unlikely event abnormal venting occurs, such as a tank overpressure, this flare also will safely manage such venting.

2.2.3 Miscellaneous Facilities

In addition to the ammonia tanks, Project YaREN will use other common infrastructure throughout the facility, including:

- Sea water cooling towers to provide the full cooling duty of the manufacturing operations, via a recycling cooling water system.
- Steam boiler and air separation unit to provide steam, oxygen, and nitrogen needed for ammonia production. To conserve water use, water condensed from the steam during the manufacturing process will be recycled back to the boiler for re-use.
- Two (2) diesel-fired 3,000 kW emergency generator engines to supply critical power in the event of a power outage, allowing the site to manage process operations to a safe-hold state.
- Two (2) diesel storage tanks providing adequate onsite fuel for the emergency power generators.
- Three (3) diesel-fired fire water pump engines with integrated diesel storage, to provide immediate firewater pump capability to respond in the unlikely event of an onsite emergency.
- An onsite wastewater treatment system to collect, store, and treat the industrial wastewater generated by the ammonia production equipment, as well as storm water that may contact process areas.

2.2.4 Materials

ICAP will manage the following materials as part of its ammonia production operation. Representative safety data sheets are provided in Exhibit B.

- **Anhydrous Ammonia (NH₃) – FINAL PRODUCT** – A colorless liquefied gas at atmospheric pressure and temperatures $\leq 27^{\circ}\text{F}$, ammonia is a molecule naturally present in our environment in different forms, including in the air, soil and water, as well as in plants and animals, including humans. It is the final product in the Project's process and will be exported from the site by marine vessels for use as non-organic fertilizer, as a low-carbon fuel, or other industrial uses. At ambient temperatures, ammonia vapor has the same pungent odor as household ammonia-based cleaners. Although ammonia vapor is lighter than air at ambient temperatures, if it is released directly to the atmosphere at cold or pressurized conditions, it can stay low to the ground and appear as a white cloud, until it warms, vaporizes, and rises. Ammonia gas is flammable, but it is difficult to ignite, especially in open-air, unconfined spaces.
- **Carbon Dioxide (CO₂) – BYPRODUCT** – This material is a colorless, odorless gas occurs naturally in the Earth's atmosphere. While CO₂ is heavier than air, its rapid mixing characteristics and its tendency to rise quickly at ambient temperature assist in effective dispersion and dilution of CO₂ when exposed to the atmosphere. CO₂ is a byproduct of the process and will be captured and transported by pipeline outside of the ammonia production facility to a carbon storage location for sequestration. That CO₂ storage location will be outside of San Patricio County.
- **Diesel Fuel (DF) – FUEL** – Diesel will be used to fuel the emergency generators and firewater pumps. It is a low-volatility petroleum-based liquid fuel.
- **Hydrogen-Rich Process Gas (PG) – INTERMEDIATE PRODUCT** – Process gas is produced during the various ammonia manufacturing steps as an intermediate product. Because this material is fully consumed to manufacture ammonia, storage of this gas onsite is not required. It consists mainly of hydrogen but can also contain water, CO, CO₂, nitrogen and methane. Once sufficiently dried and purified, hydrogen-rich process gas is used to produce ammonia.
- **Methyl Diethanolamine (MDEA - CH₃N(C₂H₄OH)₂) – RECYCLED ABSORBENT** – MDEA is a clear, colorless, liquid with an ammonia-like odor used in the removal of CO₂ from process gas. MDEA will be a purchased feedstock; it will not be manufactured onsite. To minimize the amount of MDEA required, it will be recycled and recirculated through the process, so that very little is consumed.
- **Natural Gas, Methane (CH₄)– FEEDSTOCK / FUEL** –Natural gas is an odorless, colorless gas composed primarily of methane. This gas is used as a feedstock (hydrogen source) for the production of ammonia. Natural gas also will be used to fuel the boiler and process heaters and also provide pilot gas to the flares.
- **Nitrogen (N₂) – FEEDSTOCK** – Nitrogen is a colorless, odorless, chemically inactive (i.e. "inert") gas that is the most plentiful element in Earth's atmosphere (approximately 79% of the air we breathe). Project YaREN will use Nitrogen generated onsite in the air separation unit as a primary feedstock for ammonia (NH₃) production. Since nitrogen is inert and thus does not react and is not flammable, it also will be used as utility gas, such as to help clean out (purge) pipelines or maintain safe working atmospheres for maintenance.
- **Oxygen (O₂) – FEEDSTOCK** – Oxygen makes up the other nearly 21% of the Earth's ambient air. It is an odorless, colorless gas used in this project for converting natural gas to hydrogen-rich process gas. Project YaREN will use oxygen generated onsite in the air separation unit. This oxygen will be piped to the production equipment in its gaseous state, not as a refrigerated liquid.

2.3 Federal & State Permits Authorizing Project YaREN and Related Projects

ICAP's construction and operation of Project YaREN is subject to the jurisdiction and direction of numerous state and federal agencies. These agencies implement statutory and regulatory programs designed and staffed to protect human health and safety, environmental and natural resources, public welfare, and similar values. ICAP must apply for and obtain various permits and approvals, or engage in consultations with the assigned expert agencies and stakeholders, before proceeding. Many of these approvals will be required before ICAP can begin to construct Project YaREN facilities, whereas some are required before ICAP can commence operations. In addition, many of these permitting programs require public engagement, and there will be ample opportunities for the public to comment on ICAP's requests for agency approvals, and to participate in public meetings and hearings. Most of the permits, if issued, will impose conditions on ICAP's construction and operation to avoid, minimize, and mitigate potential effects of Project YaREN on the surrounding community and environmental resources.

Project YaREN will require the following state and federal permits, approvals, and consultations, among others:

- Texas Commission on Environmental Quality ("TCEQ") Air Permitting – [Section C.1](#) of Exhibit C provides more details on TCEQ's Air Quality New Source Review ("NSR") and Prevention of Significant Deterioration ("PSD") permit and TCEQ-issued Title V Operating Permit for Project YaREN.
- TCEQ Water Use Permit – [Section C.1](#) of Exhibit C provides more details on TCEQ's review of the industrial water rights application submitted for Project YaREN.
- TCEQ Water Discharge Permitting – [Section C.1](#) of Exhibit C provides more details on TCEQ's review of the Texas Pollutant Discharge Elimination System ("TPDES") water discharge application for Project YaREN.
- U.S. Army Corps of Engineers ("Army Corps") Permitting and Related Agency Approvals and Consultations – [Section C.1](#) of Exhibit C provides more details on the Army Corps' review and permitting under the Clean Water Act and Rivers and Harbors Act, required consultations to address potential impacts to protected species and historic resources, and other measures to protect coastal resources and water quality.
- U.S. Coast Guard Review – [Section C.1](#) of Exhibit C provides more details on the Coast Guard's review under the Ports and Waterway Safety Act to ensure the waterway is suitable for the proposed vessel traffic.

In addition to these Project YaREN-specific permitting discussions, [Sections C.2](#) and [C.3](#) of Exhibit C provide similar summaries of the permitting and consultation requirements that would apply to third party projects and activities related to the natural gas supply pipeline and the CO₂ pipeline that would transport CO₂ to an offsite sequestration facility.

3 Potential Hazards and Corresponding Safeguards

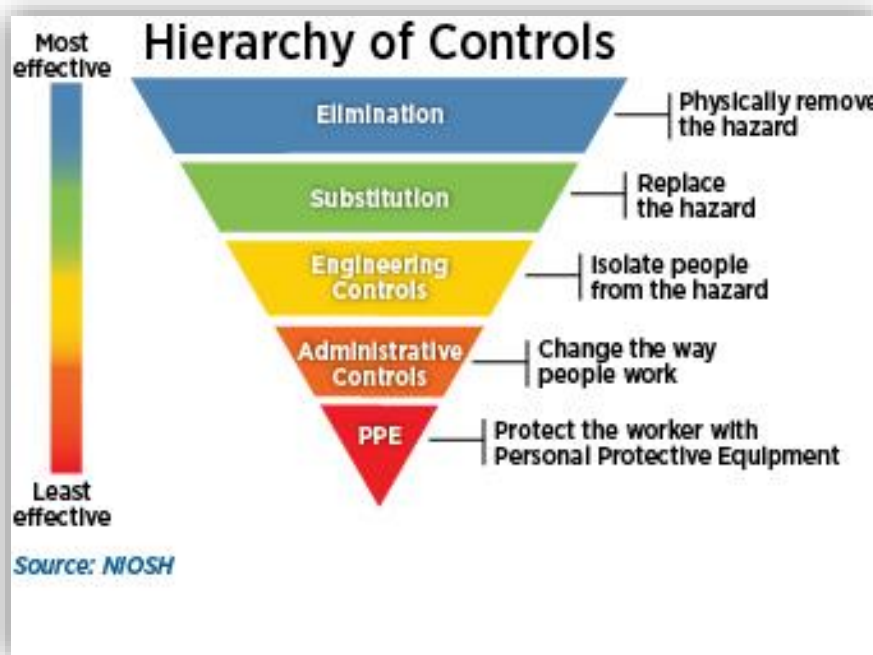
The City of Ingleside Intensive Use Ordinance, Section 78-267, and the corresponding application form require the applicant to provide a description of the hazards the proposed project may present and the corresponding safeguards the applicant proposes to implement to protect surrounding property and persons from such hazards. Potential hazards to consider may include those such as fire, explosion, noise, vibration, dust, or emission of smoke, odor, or toxic substances. The remainder of this application section provides a discussion of ICAP's safety, health, and environmental philosophy in general as well as a more specific discussions of these potential hazards and safeguards as they relate to Project YaREN.

3.1 Safety, Health, and Environmental Philosophy

Upholding the safety of the surrounding community and employees while concurrently protecting the environment during construction and operations is an ICAP core value and top priority. By focusing on the safe design,

construction, and operation of the manufacturing site, ICAP protects the safety, health, and environment of not only those inside the facility, but also the community beyond the manufacturing site. ICAP has adopted the federal Occupational Safety and Health Administration (OSHA) hazard control methodology⁷ as a foundation for Project YaREN's safe design and operation. As shown in Figure 3-1, this approach considers multiple layers of protection to minimize or eliminate potential risks. ICAP will consider the severity, likelihood, and frequency of each of the potential hazards described in the following sections to evaluate overall risk and identify the appropriate combination of control measures to safeguard against such risks.

Figure 3-1 - OSHA Hazard Control Methods



Using this hierarchy approach, ICAP will first work to eliminate identified potential hazards, where possible. If elimination is not possible, the next level considers substitution of lower risk equipment, process design, materials, or operations. Where substitution is impractical, and to supplement substituted options, ICAP will also incorporate engineering controls to reduce the likelihood of unwanted events happening and to reduce risk exposure to workers and the community from both routine and unexpected events. Engineering controls are items such as pollution controls, noise enclosures, interlocks, safety equipment, and fire protection systems.

Working together with elimination, substitution, and engineering controls are administrative controls. This layer of protection defines the methodology of how the work is accomplished by preparing facility employees with relevant procedures, training, and tools and keeping the site secure. At the administrative control level, ICAP also will work with the community to provide training, share and integrate emergency response plans, and coordinate community protections. Finally, personal protective equipment appropriate for the job function will be required within the facility at all times. Keeping workers safe inside the production areas assists with safe facility operation and, by extension, protection for the surrounding community.

⁷ https://www.osha.gov/sites/default/files/Hierarchy_of_Controls_02.01.23_form_508_2.pdf

Supplementing the use of the OSHA hierarchy to safeguard against potential hazards, as discussed further below, will be Yara's century of ammonia manufacturing experience. Since Yara will be the operator of this proposed low-carbon ammonia facility, ICAP understands that Yara's ammonia operating history is important to the community. Yara was founded in Norway in 1905 to produce mineral fertilizers to combat the then-emerging famine in Europe. In 1927, the company started using the Haber-Bosch method to manufacture the ammonia used as a feedstock for its fertilizer manufacturing operations. Since then, the company has continued developing and improving the production, storage, and transportation of ammonia.

In 1965, Yara began producing ammonia using natural gas as a feedstock; this method remains the production method predominantly used world-wide today (99%) and is that which is proposed for Project YaREN. Yara has approximately 650 plant-years of operational experience using this method, from 25 different plants across the globe. In addition, Yara operates 32 cold (atmospheric) individual ammonia storage tanks like those proposed for Project YaREN, representing approximately 1,000 tank-years since first using these types of tanks in 1973. Project YaREN will use cold (atmospheric) ammonia storage tanks for large scale storage due to the reduced risk of over pressurization, even though the operational costs are higher with cold (atmospheric) storage.

With nearly a century of experience in operating ammonia production facilities, Yara has a long-standing commitment to safety. Yara's safety incident reporting system, which dates back to 1986, shows that Yara-operated facilities that produce or export ammonia have not had an ammonia safety incident that has caused harm to the public outside of the facility.

3.2 *Fire and Explosion*

Fire and explosion events occur when flammable or combustible materials and an ignition source interact. Flammable and combustible materials that will be handled at ICAP's ammonia manufacturing facility include:

- Ammonia
- Diesel fuel
- Hydrogen-rich process gas
- MDEA
- Natural gas

Ignition sources may include:

- Flame
- Spark
- Lightning
- High-heat surface

Flammable and combustible materials are contained within the manufacturing equipment during routine operations. However, if a leak or catastrophic equipment failure were to occur, one or more of these materials could be exposed to an ignition source and result in a fire or explosion. To minimize the risks from these potential hazards, ICAP will incorporate the following approaches.

3.2.1 Elimination

ICAP will not store hydrogen-rich process gas onsite. This process gas will be produced only in an “on-demand” quantity, so that it is produced and promptly consumed continuously in the ammonia manufacturing process. Eliminating bulk storage of hydrogen-rich gas results in the overall risk reduction of a hydrogen-based fire or explosion.

Also, ICAP will not load into nor transport ammonia using tank trucks or railcars. These ammonia transportation modes operate at high pressure, which is significantly different than the near-atmospheric pressure tanks and marine vessels Project YaREN will use. By eliminating tank truck and railcar loading and transport of the produced ammonia, ICAP eliminates the risk of fire or explosion from these high-pressure operations not only at the ICAP manufacturing facility but also within the surrounding communities and throughout the highways of Texas and beyond.

3.2.2 Substitution

As described earlier, ICAP will manufacture ammonia using proven industry technologies, such as autothermal reforming (ATR) and Haber-Bosch ammonia synthesis to produce Project YaREN's ammonia. These technologies already have been optimized by ICAP partner Yara and other ammonia manufacturers both in the US and globally for decades, with appropriate substitutions to reduce risk already designed into these licensed technologies. Thus, further material or technology substitution is not anticipated to provide additional substantial safeguard against potential fire and explosion hazards of the ammonia production operation beyond what already is designed into and proven by the carefully selected manufacturing technologies used in the proposed project.

3.2.3 Engineering Controls

ICAP will design its ammonia manufacturing facility to include multiple layers of engineering controls to keep flammable and combustible materials safely contained and to reduce the presence of ignition sources. These controls include but are not necessarily limited to:

SAFE CONTAINMENT AND MANAGEMENT OF FLAMMABLE AND COMBUSTIBLE MATERIALS

- Double-walled ammonia tanks⁸
- Welded connections in piping, instead of flanges or screwed connectors, wherever safely practical
- Aboveground piping to the extent possible to allow for monitoring and to reduce the possibility of corrosion.
- Double isolation valves for pipeline segments that could be open at the end to the atmosphere, such as during maintenance
- Automated equipment monitoring and associated safety instrumented system (SIS)⁹ to bring the facility to a safe state if out-of-range pressure or temperature or other unsafe conditions are indicated, such as excessive vibrations, overspeed, or production surges.

⁸ Additional details related to ammonia tank design is included in Section 3.8.1 of this application.

⁹ A SIS is a specialized control system designed to prevent or mitigate hazardous situations in industrial processes by taking automated action when abnormal conditions are detected. It is a specialized control system designed to prevent or mitigate hazardous situations in industrial applications by taking automated action when abnormal conditions are detected.

[https://csrc.nist.gov/glossary/term/safety_instrumented_system#:~:text=A%20system%20that%20is%20composed,safety%20interlock%20system%20\(SIS\)](https://csrc.nist.gov/glossary/term/safety_instrumented_system#:~:text=A%20system%20that%20is%20composed,safety%20interlock%20system%20(SIS))

- Automated alarms in the control room, which will be staffed and monitored 24 hours/day, 7 days/week, and audible alarms in the manufacturing areas to alert operators of possible deviation from normal operating conditions. Automated alarms and/or manual alarm/shutdown panels throughout the facility will be configured to trigger an automated shutdown, if appropriate to control the situation.
- Pressure relief valves and vents piped to flares to provide over-pressure control and deliver vented gases to a controlled, elevated, safe release point, in the unlikely event of an abnormal operating situation

- Onsite gas detection systems to assist in early identification and repair of potential leaks well in advance of ammonia or other gases reaching a concentration capable of fire or explosion, either within or beyond the facility's boundaries.

CURTAIN AND MANAGE IGNITION SOURCES

- Lightning protection, which manages lightning strikes by directing the energy to ground and away from production equipment
- Static electricity protection to abate the buildup of electrostatic energy and, as needed, direct it to ground and away from sensitive equipment and flammable materials
- Program to conduct and implement an Electrical Area Classification study, which establishes the appropriate electrical classification for each area of the facility and, as part of the engineering design, selects equipment appropriate and safe for use in each electrical designation
- Detection and suppression systems, to identify potential fires and automatically initiate suppression at the source, through application of water, foam, or other methods suitable for the material of concern.

Detection systems may include:

- Fire Detection – Optical flame detectors, heat detectors, and smoke detectors
- Gas Detection – Point-located and line-of-sight ammonia and flammable gas detectors throughout the production areas

Fire suppression systems may include:

- Water tanks
- Pumps
- Hydrants
- "Monitors" (e.g. high-volume nozzles for large-volume application)
- Hand-held extinguishers
- Appropriate metallurgy to reduce/eliminate potential for metal-on-metal sparking
- Automated equipment monitoring to identify and manage elevated temperature situations

CONSIDERATION IN CONSTRUCTION AND SITING

- Building construction materials will be fire resistant and blast proof where appropriate and designed to mitigate fire/explosion risk to the community and Project YaREN personnel.
- Equipment fireproofing will be installed on critical structures and equipment.
- Building and manufacturing equipment will be appropriately physically separated and incorporate fire barriers to keep potential fire/explosion scenarios from escalating and also providing safe egress from the affected area
- Facility siting and setback distances will be established based on fire studies so that radiant heat does not impact adjacent onsite personnel or equipment or nearby communities.

Additional details regarding the engineering controls equipment described above are available in Section 3.8.2 of this application.

3.2.4 Other Safeguards

As described in Sections 3.6 and 3.7 of this application, ICAP will incorporate numerous administrative controls and personal protective equipment that safeguard against and reduce the likelihood, severity, and consequently overall risk of fire and explosion hazards associated with Project YaREN.

3.3 Noise and Vibration

High noise and excessive vibration can pose potential hazards to human health and the environment. Noise and vibration from industrial operations can result from equipment and activities such as:

- Rotating machinery such as pumps and compressors
- Process vents to atmosphere
- High-volume flare operations

3.3.1 Elimination

Elimination of potential noise- and/or vibration-generating equipment is not feasible for Project YaREN. However, as described in Section 3.3.3, ICAP will include various engineering controls for noise and vibration abatement associated with the ammonia production facility.

3.3.2 Substitution

Similar to the discussion in Section 3.2.2, optimized substitution for noise- and vibration-generating activities and equipment already has been integrated into the industry-standard manufacturing technologies selected for Project YaREN. Thus, further substitution is not anticipated to provide additional substantial safeguard against potential noise and vibration hazards at this site. However, as described in Section 3.3.3, ICAP will include various engineering controls for noise abatement associated with the ammonia production facility.

3.3.3 Engineering Controls

The following engineering controls will be included in Project YaREN's design as preventative measures to effectively manage the potential for noise hazards to the community and comply with local zoning regulations for noise level and control.

- Manufacturing equipment will be designed/selected to reduce or minimize noise. For example, compressor and compressor building design will include elements for noise abatement; rotating machinery will be isolated, where possible, to these noise-abated areas.
- Noise studies/analyses during front-end engineering and design (FEED) will review, validate, and, if applicable, revise the design of mechanical equipment and/or site layout, such that noise and vibration disturbance to the community will be minimized during routine facility operations.
- As a preventative measure, ICAP will implement a real-time system that monitors for abnormal vibration for specific process equipment and alerts operators of issues requiring attention, allowing for prioritized and focused correction of such abnormal conditions, should they occur.
- During routine operations, ICAP will minimize the venting of ammonia production equipment to atmosphere and to the flares. When such vents are required, such as for steam, ICAP will include acoustic silencers on such direct vents to atmosphere, to reduce the associated noise.

- Certain infrequent situations may exist that could require controlled venting to prevent an unsafe overpressure situation. Project YaREN will address these scenarios with the following safeguards:
 - If the CO₂ pipeline is out of service, ICAP will need to vent the CO₂ to atmosphere, as represented in the project's air permit application. ICAP has designed these CO₂ vents with acoustic silencers as well, and they will release at an elevation and distance from its neighbors and the community at large to minimize noise and vibration that may be present during these infrequent high-volume venting activities.
 - For planned maintenance, startup, and shutdown (MSS) activities, ICAP must depressure its production equipment to a safe level to conduct such MSS tasks. During these infrequent events – anticipated to occur only once every three to five years after initial facility startup – ICAP must pipe certain equipment to the flares. ICAP will design the startup and shutdown sequences such that not all equipment vents through piping to the flares simultaneously, reducing the total volume flared at a given time. These planned startup and shutdown sequences will reduce noise and vibration that may be associated with such events. Also, the flares will be located at sufficient distance so as to not adversely expose the neighbors and the community at large to noise and/or vibration that may result.

3.4 Dust

Project YaREN is a blue ammonia production facility that will not handle bulk solids or other dust-generating equipment. Thus, dust is not expected to be a potential hazard from the project's manufacturing operations.

3.5 Smoke, Odor, and Toxic Emissions

With the exception of possible smoke associated with potential fire and explosion hazards, discussed in Section 3.2, Project YaREN does not pose an additional potential smoke hazard. While there may occasionally be visible plumes from equipment such as gas-fired heaters and boilers, as well as cooling towers and steam vents, those plumes will be steam – which is water vapor – not smoke.

Because ICAP will produce ammonia, there is a potential for odor and toxic emissions hazards. Odorous and toxic emissions from routine operations and planned maintenance, startup, and shutdown (MSS) activities are quantified and modeled as part of the air quality and water discharge permits, which have been applied for and are pending with the TCEQ. In these applications, ICAP has demonstrated how it will use best available control technologies for air emissions and water discharge management practices to minimize impacts to the environment from routine and MSS operations. As a required element of these permit applications, ICAP has used EPA and TCEQ-approved modeling technologies to demonstrate that these discharges of both odorous and toxic emissions from the facility's routine and MSS operations will result in air and water quality within the community that is considered to be protective of human health and the environment.¹⁰

The potential hazards for odors and toxic emissions from non-routine/non-MSS activities and corresponding safeguards largely parallel the elimination, substitution, and engineering controls for the potential hazards for fire and explosion, discussed in Section 3.2, with several additional considerations. Potential hazards for odor or toxic emissions from non-routine operations beyond those already discussed in Section 3.2 include:

¹⁰ Protective limits are the standards and guidelines established by the U.S. Environmental Protection Agency (EPA), Texas Commission on Environmental Quality (TCEQ), and the National Institute for Occupational Safety and Health (NIOSH).

- Releases of ammonia from a tank, process equipment, or piping
- Spills of other materials from tanks, process or emergency equipment, or piping
 - MDEA
 - Diesel fuel
 - Untreated wastewater

Each of these additional potential hazards will be safeguarded through the site's spill prevention program and equipment, which will include the following elements:

- Ammonia tanks will incorporate double walls and/or be surrounded by a dike wall large enough to hold the contents of the tank plus adequate space to accommodate stormwater if a tank were to leak during a major storm event.
- Water suppression systems that deploy to contain a cold ammonia spill, allowing ammonia to dissolve into the water and be retained within the area's drainage system and dike walls for later treatment in the wastewater system. Dissolving ammonia in water is safer and results in lower emissions and odors than allowing the cold liquid to travel across the ground and/or evaporate as an unelevated air release.
- Spill control equipment such as pads, socks, booms, and absorbent will be available across the site in strategic areas to assist in collecting, containing, and removing spilled liquids such as diesel or MDEA from site before they can discharge to the environment.
- The wastewater system includes a large retention pond to collect and store industrial wastewater and first-flush stormwater. The site drainage system will direct wastewater through gravity draining and pumping to points at which untreated wastewater can be prevented from leaving the site.

ICAP will maintain the spill control equipment, systems, and written plan onsite and train its employees on the appropriate use of that equipment on a recurring basis.

3.6 Administrative Controls

In addition to the design-focused elimination, substitution, and engineering controls discussed in the hazard-specific Sections 3.2 through 3.5, ICAP also will implement substantial administrative controls to complement the safeguards inherent in the facility's design. Administrative controls include policies, procedures, plans, training, and coordination efforts. The following administrative controls are examples of these administrative controls ICAP will implement to collectively safeguard against the potential hazards discussed previously and are not necessarily specific to a single hazard category.

- Process Safety Management (PSM) program commensurate with federal OSHA requirements¹¹
- Risk Management Program (RMP) pursuant to federal EPA requirements¹²
- Detailed Process Hazard Analyses (PHAs), evaluated at multiple stages, from the front-end engineering and design (FEED) phase of the project through construction and operation¹³
- Emergency Response Plan (ERP), with training and coordination of the same with regulating agencies,

¹¹ 19 CFR §1910.119. See also Section 3.9.1.

¹² 40 CFR Part 68. See also Section 3.9.1 for additional information.

¹³ See also Section 3.10 for additional information.

local first responders, City services, and the community as a whole.¹⁴ ERPs will include information on safe egress to exit the facility and, if applicable, move through the community and away from the facility, if warranted.

- Contractor management program, to identify and engage those contracted services and personnel that are specifically qualified for their assigned tasks, including applicable training, certifications, safety records, and government clearances
- Safe work practices, which will include written programs, procedures, training, and refresher education on items such as energy lock out/tag out, work permits, job safety analyses, daily pre-work task-specific safety meetings, limited and designated smoking areas, and others
- Training and performance assurance, to confirm construction and operation of the facility is accomplished by personnel that are specifically and adequately trained in their fields
- Management of Change (MOC) program, to evaluate proposed modifications to facility design, operations, organization, or activities prior to implementation, to protect against unforeseen new hazards being introduced throughout the facility's life cycle
- Site security, such as physical barriers and continually manned restricted entry points with verification of mandated credentials for each entering individual, lighting, monitored cameras, audible and visual alarms, cyber security measures, and other industry-proven security practices and procedures
- Emergency communications equipment, such as sirens, all-clear notifications, portable communications equipment (e.g. radios, mobile phones, analog phones), beacons, and public address systems
- Vehicular traffic control, including procedures for traffic flow within the facility as well as limitations on the types of vehicular engines permitted in various locations around the site
- Proper facility housekeeping in production and administrative areas of the facility, to minimize waste, dust, and debris

3.7 Personal Protective Equipment

Personal protective equipment (PPE) appropriate for the job function will be required within the manufacturing facility at all times. Keeping workers safe inside the facility assists with safe operation and thus also results in protection for the surrounding community. ICAP will require the following minimum PPE for each individual entering the production areas.

- Safety eyewear
- Gloves
- Safety vests
- Safety footwear
- Hardhat
- Hearing protection
- Fire-retardant clothing
- Personal emergency respirators
- Handheld or personal gas monitors

¹⁴ See also Section 3.11 for additional information.

Additionally, for specialized activities, such as those required for specific construction and maintenance tasks, other activity-specific PPE may be required. This specialized PPE will be evaluated specifically for the task and may include fall protection harnesses, supplied air respirators, and/or chemical-resistant clothing.

3.8 *Engineering Controls and Safety Equipment*

As summarized previously, Project YaREN will follow the OSHA hierarchy of controls – elimination, substitution, engineering, administrative, and personal protective equipment – to incorporate equipment and site design considerations that safeguard against potential hazards associated with the ammonia manufacturing facility. The following provides additional information on the types of safety equipment and design that ICAP will use for Project YaREN as part of these safeguards.

3.8.1 *Ammonia Storage Tank Safety Upgrades*

Project YaREN ammonia tanks will exceed the minimum industry design code as follows:

- Full double walled ammonia storage tanks (applicable codes only require a single wall tank)
- Use of superior material grades, with chemical and mechanical characteristics that provide better operational longevity in a coastal environment.
- Stringent requirements on metal hardness limit to optimize performance, reliability, and durability of components.
- Controls:
 - Deploy three layers of independent and redundant pressure control/protection systems on ammonia storage tanks and design tanks' pressure control to release to flare.
 - Equip pumps with automated and remotely operated foam system, which includes foam collection/containment.
 - Provide automated and remotely operated in-tank valves at pump connections and at tank drain locations.
 - Return generated vapors and liquid recycle from the ammonia pumps back to ammonia storage tanks. This system is called the Boil Off Gas (BOG) system, which compresses the captured vapors and cools them so that the liquid condenses and joins the liquid ammonia in the tanks.
 - Provide safe operation of the tanks in the event of electrical power failure through the use of onsite diesel-fueled emergency generators. ICAP's emergency power generation equipment will allow for continuous operation of the tank's refrigeration and vapor control/BOG systems.
 - Provide leak detection system and ammonia vapor suppression systems for relief valves on the top of storage tanks.
 - Provide monitored and alarmed camera supervision of the ammonia storage area using cameras at ground level covering each tank's entire circumference and two on top of each tank covering the pumping area.
 - Provide concrete post barriers around ammonia storage tanks to prevent vehicular collisions.
- Detection:
 - Provide multiple temperature measurements in the space between the inner and outer tank walls to assist in detecting potential leaks from inner tank well in advance and take necessary

measures to confine the ammonia and correct such leaks.

- Provide an ammonia leak detection monitoring system at the ammonia storage facility, capable of notifying central control room and facility operation team immediately upon detection of potential leaks.
- Prevention:
 - Provide loading arms with self-closing emergency release coupling systems, automated isolation systems, and vapor return lines to prevent local release.

3.8.2 Other Safety Equipment and Design Practices

- Control Room – The onsite control room will be manned 24 hours/day, 7 days/week. This facility will monitor and control essential aspects of the manufacturing operations and include fully automated and alarmed Distributed Control Systems (DCS) and Safety Instrumented Systems (SIS)
- Weather Station – ICAP will operate a dedicated weather station onsite to measure precise wind speed and indicate wind direction across the facility. The weather station also will provide information on ambient temperature, relative humidity, and similar data critical to routine operations and, in the event it is required, emergency response. The weather station information will be available in the Control Room and will assist in identifying if neighboring areas could be affected in the unlikely event of an abnormal condition at the facility.
- Emergency Isolation and Shutdown Systems – If the facility's extensive production monitoring systems indicate that a shutdown is warranted to keep the community and/or the facility safe, the shutdown will be initiated either automatically through the DCS and SIS systems without requiring the Operator's intervention or manually by the personnel in the Control Room (e.g. following visual or other indication of a potential upset condition).
- Emergency Manual Shut Down – Qualified YaREN Operations personnel will be authorized and empowered to execute a manual production shutdown if, in their professional Operations experience, an upset situation may be imminent based on their observations in the production areas or as observed from data in the Control Room. Actuation of these buttons will initiate specific sequential steps leading to a controlled partial shutdown of the affected operating area. If needed, a full shutdown of production operations will be initiated by the Emergency Shut Down (ESD) system. Additionally, the main pumps and motors have local shut down buttons that can be actuated without having to return to the Control Room, saving critical response time in a potential upset situation.
- Spill control, containment, and drainage systems.
- Isolation valves and mechanical safety devices, such as safety relief valves and flares
- Overspeed protection, which is a safety system that will identify and warn the operator and/or automatically slow rotating equipment such as pumps and compressors should it detect abnormal speeds.
- Proper lubrication through a scheduled proactive procedure that will require equipment parts to be lubricated per the manufacturer's recommendation methods and frequencies to reduce vibration or mechanical defects.
- Over pressure protection such as pressure/vacuum relief valves will be installed on applicable manufacturing equipment. These valves are designed to automatically operate/activate before the specific equipment reaches a pressure or vacuum situation outside of normal range. The pressure/vacuum relief valve will activate and bring the equipment to a safe condition and pipe the

associated vapors to the facility's flares or another safe location.

- Flares will be used as part of Project YaREN to safely pipe and control gases from the facility during planned maintenance, start-up, and shutdown activities as well as unlikely and infrequent upset conditions. Flare systems and associated piping bring emissions to an elevated release point – away from people and equipment. The flares' pilot lights and flared gas flow rates and heating values will be continuously monitored and recorded to demonstrate operation within safe and environmentally protective conditions.
- Equipment will be selected with design pressure and temperature ratings that, in many cases, will be more stringent than the minimum ratings specified in applicable design codes and standards.

3.9 Industry Design Standards, Codes, and Regulatory Compliance

Project design must be conducted by licensed professional engineers and overseen by expert agencies, each with duties and expertise to uphold public health, safety, and welfare. The permits and consultations described in Section 2.3 establish various levels of authorization, verification, and third-party enforcement, in addition to design, construction, and operations oversight. In addition to these regulatory permits and consultations, Project YaREN also is subject to extensive design codes, procedures, and other regulatory requirements. A summary of many of these relevant design and operational requirements, standards, and codes is included in this section.

3.9.1 Agencies and Standard-Setting Organizations

Project YaREN will comply with the applicable regulatory programs and industry standards outlined below, in addition to the detailed project-specific conditions of its environmental permits and consultations.

- **Occupational Safety and Health Administration (OSHA).** OSHA sets and enforces standards to ensure safe and healthy working conditions, reducing the risk of industrial accidents and releases. There are a number of OSHA regulations that are specifically applicable to the project, including:
 - 29 CFR §1910.111 Anhydrous Ammonia: This section sets forth requirements for the safe storage and handling of anhydrous ammonia to prevent accidental releases and ensure the safety of workers and the public.
 - 29 CFR §1910.38 Emergency Action Plans and §1910.120 Emergency Response: These sections require industrial facilities of all types to develop and implement appropriate emergency action plans and procedures for responding to the facility's specific hazardous substance, providing for the safety of employees and, by extension, the surrounding communities during emergencies.
 - 29 CFR §1910.119 Process Safety Management (PSM): This section mandates the management of hazards associated with certain processes using hazardous chemicals to prevent accidental releases and provide for safe operation.
- **U.S. Environmental Protection Agency (EPA).** EPA enforces regulations that limit pollution and hazardous emissions and discharges from facilities, providing for protection and maintenance of air and water quality. In addition to overseeing state implementation of the air and water permits described in Section 2.3, EPA also directly administers its Risk Management Program:
 - 40 CFR Part 68 Subpart E Emergency Response and Subpart G Risk Management Plan (RMP): These regulations require facilities to develop emergency response programs and risk management plans to mitigate the effects of chemical accidents and protect public health and the environment. The EPA RMP and related programs coordinate and overlap with the OSHA

PSM program, described above, to provide various perspectives and, as a result, multiple layers of consideration and safeguarding against potential hazards associated with manufacturing facilities.

- **Department of Transportation (US DOT).** The US DOT regulates the transportation of hazardous materials, including by pipeline, rail, and truck.
- **United States Coast Guard.** In addition to the recommendations and assessments described in Section 2.3, the Coast Guard has the authority over waterways to enforce safe navigation and over vessels to prevent pollution and provide for marine safety.
- **U.S. Army Corps of Engineers.** In relation to Project YaREN, the Army Corps' principal roles relate to permitting approvals and consultations described in [Section 2.3](#).
- **Office of Response and Restoration (OR&R).** OR&R is part of the National Oceanic and Atmospheric Administration and administers programs and regulations related to the prevention, response, and restoration of coastal environmental damage from hazardous materials and other pollutants.
- **Texas Commission on Environmental Quality (TCEQ).** TCEQ is the state agency responsible for protecting public health and the environment. TCEQ permitting and reviews for Project YaREN are further described in [Section 2.3](#).

3.9.2 Other Key Industry Safety Standards

In addition, as part of its design, operation, and construction philosophy, ICAP will follow recognized and generally accepted good engineering practices (RAGAGEP), which have been developed by domestic and international governmental, non-governmental, and third-party engineering, health and safety, fire protection, electrical, construction and manufacturing organizations. These standards represent over a century's worth of experience in commercial and industrial operations. Such standards undergo periodic reviews and revisions based on learnings from past events, new and developing technologies, and evolving regulatory requirements. Project YaREN will implement the multitude of the standards from these organizations that are applicable to its Ingleside ammonia manufacturing operation, to establish a safe and protective production facility. These standards organizations include but are not necessarily limited to those from the following organizations:

- American Concrete Institute (ACI)
- American Industrial Hygiene Association (AIHA)
- American National Standards Institute (ANSI)
- American Petroleum Institute (API)
- American Society of Civil Engineers (ASCE)
- American Society for Testing and Materials (ASTM)
- Compressed Gas Association (CGA)
- Institute of Electrical and Electronics Engineers (IEEE)
- International Society of Automation (ISA)
- International Organization for Standards (ISO)
- Manufacturers Standardization Society (MSS)
- National Association of Corrosion Engineers (NACE)
- National Fire Protection Association (NFPA)

- User Association of Automation Technology in Process Industries (NAMUR)
- National Electrical Manufacturers Association (NEMA)
- Society for Protective Coatings (SSPC)
- Underwriters Laboratories (UL)
- Welding Research Council (WRC)

3.10 Detailed Safety Studies / Process Hazard Analyses

OSHA's Process Safety Management (PSM) and EPA's Risk Management Program (RMP) require initial development and ongoing review/update of a project's detailed safety studies and Process Hazard Analyses (PHAs). A complete PHA, comprising the following sequential steps, will be executed during the front-end engineering design (FEED) stage of the project. This PHA will be kept active and updated regularly during the engineering phase as well as throughout facility construction and operational lifecycles:

- **Hazard Identification (HAZID)** - a preliminary risk assessment technique used to identify potential hazards in the early stages of a project. It is typically conducted during the conceptual design or feasibility study phase. The primary goal of HAZID is to identify the possible hazards that could impact the safety, environment, and operability of a facility. This early identification allows for the incorporation of safety measures into the project design before significant investments are made.
- **Hazards and Operability study (HAZOP)** - systematic examination of a process or operation to identify potential hazards and problems. The goal of a HAZOP study is to find potential hazards before they happen, evaluate their possible impact, and evaluate how to avoid them.
- **Layers of Protection Analysis (LOPA)** - evaluates the likelihood of a harmful event occurring in a system. LOPA assesses the frequency of events that could cause a hazard, the likelihood of protection layers failing, and the consequences of those failures.
- **Safety Integrity Level (SIL)** - measure of how well a safety system needs to be designed in terms of its ability to avoid failure. It is a relative level of risk reduction that a safety function provides, or a target level of risk reduction that needs to be achieved.
- **Quantitative Risk Analysis (QRA)** - the process of identifying, analyzing and evaluating risks of the project.

3.11 Emergency Response Planning

ICAP understands the importance of a robust Emergency Response Plan (ERP) in keeping its community, its personnel, and its manufacturing facility safe and protective of health and environment throughout the region. The facility will develop and implement an Incident Command System (ICS), which will be activated in case of an emergency. This ICS will allow for communication with employees, local officials, professional and local fire-fighters, and other first responders. Additionally, government authorities and city officials will be notified as stakeholders in the ICS.

Industry-standard¹⁵ Emergency Response Guidelines (ERG) generally suggest evacuation zones for community

¹⁵ Occupational Health and Safety Administration (OSHA), National Institute of Occupational Safety and Health (NIOSH), Department

management during various product releases, spills, fires, or similar hazards. ICAP will develop the manufacturing ERPs for Project YaREN during the detailed design and construction phases of the project, well in advance of the facility's first operation. These plans will be developed in collaboration with experienced facility operators, local emergency responders, and subject matter experts. ICAP will communicate with the community through focus groups – City officials, first responders, neighborhoods, and others – during ERP development to receive input and provide information about its plans for emergency response in various theoretical situations.

ERPs also will be developed for the construction phase of the project, so the construction team also adheres to safety regulations and requirements and has plans in place to protect the community during the development of the site.

3.11.1 Site-specific ERP

Site-specific ERPs will be developed during detailed engineering in coordination with other safety studies, which will address fire, chemical release, spills, and natural hazards scenarios. The plans will include:

- Emergency preparedness objectives, policies, resources, and training requirements
- Pre-incident plans, which will be established using standards such as NFPA 1660 detailing the end-to-end pre-planning process, covering topics ranging from physical and site considerations and occupancy considerations to water supplies and fire protection systems, emergency shutdown systems or processes, incident operations, and plan maintenance.
- Emergency response, communication plans with established roles, direct responsibilities, contact process for facility personnel, onsite response teams, offsite response teams, public emergency services, and community outreach.
- ICS, which is a management tool used to coordinate and control emergency responses. The ICS is a standardized approach that allows agencies to work together using common procedures and terminology. The ICS helps ensure that responders from multiple agencies can work effectively together. It complements other aspects and addresses clear and efficient methods for command, operations, planning, logistics, and finance. Industry standards such as NFPA 1550 help unify methods used.
- Egress plans, which address various events and levels impacting immediately local personnel, production area, site-wide, or offsite areas near the facility property. Notification, traffic control, and similar tactics are addressed in coordination with Local Emergency Planning Committees and other public entities.

3.11.2 Training and Mutual Aid

Onsite and offsite emergency response teams will be trained and equipped with necessary resources to respond to incidents. This collaboration is anticipated to involve employees, hired professionals, and mutual aid agreements with other skilled and trained emergency response teams. Training will be highly structured, at established frequencies, with appropriate tools, and follow necessary qualifications from industry standards such as NFPA 1081 for fire brigades.

of Transportation (DOT), Pipeline and Hazardous Materials Safety Administration (PHMSA), U.S. Environmental Protection Agency (EPA).

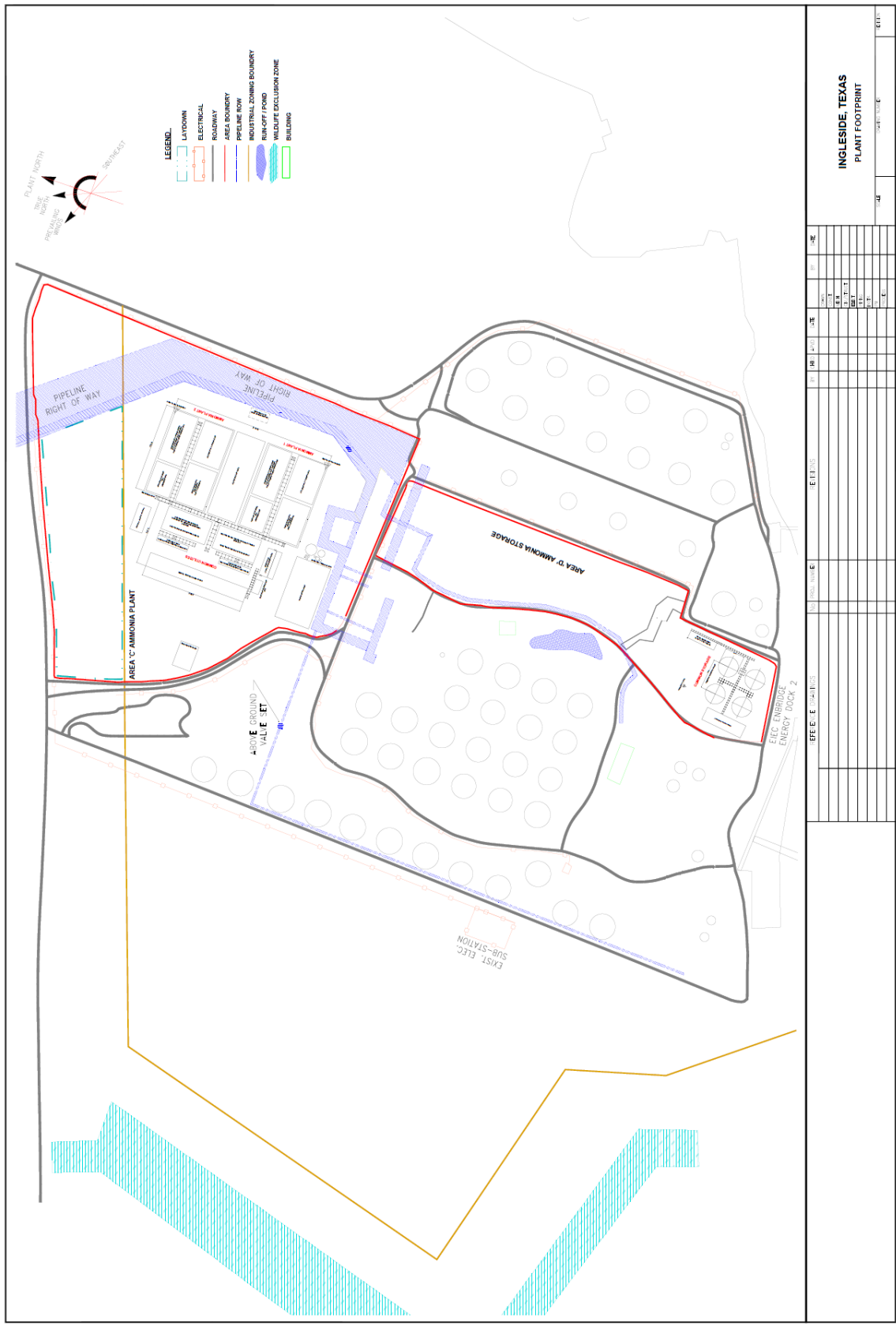
4 Exhibits

Exhibit A – Proposed Facility Layout

Exhibit B – Representative Safety Data Sheets (SDS)

Exhibit C – Federal & State Permits Authorizing Project YaREN and Related Projects

Exhibit A – Proposed Facility Layout



INGLESIDE, TEXAS PLANT FOOTPRINT									
DATE	11/11/2011	TIME	10:00 AM	BY	W. J. H.	REVIEWED	W. J. H.	DATE	11/11/2011
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Exhibit B – Representative Safety Data Sheets (SDS)

Conforms: GHS (rev 7) (2017)

(This Safety Data Sheet conforms to the requirements of the Hazard Communication Standard (HCS)
(29 CFR 1910.1200(g)), revised in 2012.) - United States

Date of issue/ Date of revision : 06/27/2025
Date of previous issue : 06/17/2022
Version : 2.0



SAFETY DATA SHEET

Anhydrous Ammonia

Section 1. Identification

GHS product identifier : Anhydrous Ammonia
Product type : gas (Liquefied gas.)
Product code : PA001U
Uses
Area of application : Industrial applications, Professional applications
Supplier
Supplier's details : Yara Clean Ammonia US Inc.
Address
Street : 100 North Tampa Street, Suite 3800
Postal code : 33602
City : Tampa, FL
Country : United States
Telephone number : +1 813 222 5700
Fax no. : +1 813 875 5735
e-mail address of person responsible for this SDS : yna-hesq@yara.com
Emergency telephone number (with hours of operation) : US: Chemtrec 24-hours Emergency Response: 1-800-424-9300
Canada: 24 Hour Emergency Service, CHEMTREC 1-800-424-9300

National advisory body/Poison Center

Name : The National Poisons Emergency number
Telephone number : 1 800 222 1222

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture. : FLAMMABLE GASES - Category 2
GASES UNDER PRESSURE - Liquefied gas
ACUTE TOXICITY (inhalation) - Category 3
SKIN CORROSION - Category 1B
SERIOUS EYE DAMAGE - Category 1

AQUATIC HAZARD (ACUTE) - Category 1
 AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms	:	
Signal word	:	Danger
Hazard statements	:	H221 Flammable gas. H280 Contains gas under pressure; may explode if heated. H314 Causes severe skin burns and eye damage. H331 Toxic if inhaled. H400 Very toxic to aquatic life. H411 Toxic to aquatic life with long lasting effects.
Precautionary statements		
Prevention	:	P280 Wear protective gloves/clothing and eye/face protection. P260 Do not breathe gas or vapour.
Response	:	P305 IF IN EYES: P351 Rinse cautiously with water for several minutes. P338 Remove contact lenses, if present and easy to do. Continue rinsing. P304 IF INHALED: P340 Remove person to fresh air and keep comfortable for breathing. P310 Immediately call a POISON CENTER or doctor/physician. P303 IF ON SKIN (or hair): P361 Take off immediately all contaminated clothing. P353 Rinse skin with water.
Storage	:	P410 + P403 Protect from sunlight. Store in a well-ventilated place.
Hazards not otherwise classified	:	None known.
Additional information	:	Liquid can cause burns similar to frostbite.

Section 3. Composition/information on ingredients

Substance/mixture	:	Substance
CAS number/other identifiers		
Other means of identification	:	ammonia, anhydrous
CAS number	:	7664-41-7

Ingredient name	%	CAS number
Ammonia	100	7664-41-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention immediately.
- Inhalation** : If inhaled, remove to fresh air. Get medical attention immediately. If not breathing, give artificial respiration. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If necessary, call a poison center or physician.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Flush contaminated skin with plenty of water. Do not rub affected area. Get medical attention immediately. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Chemical burns must be treated promptly by a physician.
- Ingestion** : Not applicable (gas). Get medical attention. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. As this product rapidly becomes a gas when released, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage. Liquid can cause burns similar to frostbite.
- Inhalation** : Toxic if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns. Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.
- Ingestion** : May cause burns to mouth, throat and stomach. Ingestion of liquid can cause burns similar to frostbite.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following: pain, watering, redness, frostbite (Cryogenic burn)
- Inhalation** : Adverse symptoms include the following: wheezing and breathing

- difficulties, asthma
- Skin contact** : Adverse symptoms may include the following: pain or irritation, frostbite (Cryogenic burn), blistering may occur
- Ingestion** : Adverse symptoms may include the following: frostbite (Cryogenic burn)

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : 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. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : In case of fire, allow gas to burn if flow cannot be shut off immediately. Use an extinguishing agent suitable for the surrounding fire. Apply water from a safe distance to cool container and protect surrounding area.
- Unsuitable extinguishing media** : None identified.
- Specific hazards arising from the chemical** : Contains gas under pressure. Flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. This material is very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials: nitrogen oxides, Avoid breathing dusts, vapors or fumes from burning materials., In case of inhalation of decomposition products in a fire, symptoms may be delayed.
- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.
- 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. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.

Remark : Flammable
 Remark : Non-explosive.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

- Small spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Contains gas under pressure. Do not breathe gas. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking

and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** :
- Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Ammonia (Ammonia)	OSHA PEL 1989 (1989-03-01). [Ammonia] STEL 27 mg/m3 35 ppm OSHA PEL (1993-06-30). [Ammonia] TWA 35 mg/m3 50 ppm NIOSH REL (1994-06-01). [AMMONIA] TWA 18 mg/m3 25 ppm STEL 27 mg/m3 35 ppm ACGIH TLV (1994-09-01). [Ammonia] TWA 17 mg/m3 25 ppm STEL 24 mg/m3 35 ppm CAL OSHA PEL (2018-05-16). [ammonia] STEL 27 mg/m3 35 ppm TWA 18 mg/m3 25 ppm

Biological exposure indices

No exposure indices known.

- Appropriate engineering controls** :
- Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- Environmental exposure controls** :
- Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** :
- A washing facility or water for eye and skin cleaning purposes should be present. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing.
- Eyeface protection** :
- 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, gases or dusts.

Recommended: full-face mask, Europe; CEN: EN136, If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection

- : 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. For general applications, we recommend gloves with a thickness typically greater than 0.35 mm. It should be emphasized that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn.

Body protection

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved.

Other skin protection

- : Appropriate footwear and any additional skin protection measures 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 protection

- : 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.

Personal protective equipment (Pictograms)



Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state	: gas [Liquefied gas.]
Color	: Colorless.,
Odor	: Pungent.
Odor threshold	: 5 ppm
pH	: Not applicable.
Melting point/freezing point	: -78 °C (-108 °F)
Boiling point or initial boiling point and boiling range	: -33 °C (-27 °F)
Flash point	: Not applicable.
Flammability	: Flammable
Lower and upper explosion limit/flammability limit	: Lower: 15 %(V) Upper: 27 %(V)

Vapor pressure	: 8,611 hPa @ 20 °C (68 °F)
Relative vapor density	: 0.6 [Air = 1]
Relative density	: 0.682 @ -33.4 °C (-28.1 °F)
Density	: Not applicable.
Solubility in water	: 510 - 531 g/l @ 20 °C (68 °F)
Partition coefficient: n-octanol/water	: Not applicable.
Auto-ignition temperature	: 651 °C (1204 °F)
Decomposition temperature	: Not applicable.
Viscosity	: Dynamic: 0.22 mPa.s Kinematic: Not determined.
Molecular weight	: 17.04 g/mol
Explosive properties	: Non-explosive.
Oxidizing properties	: Non-oxidizer. No oxidizing ingredients present.
<u>Particle characteristics</u>	
Median particle size	: Not applicable.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Incompatible materials	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Method	Species	Result	Exposure
Ammonia	LC50 Inhalation Vapor	Rat	7.939 mg/l	1 h

Conclusion/Summary : Toxic if inhaled.

Irritation/Corrosion

Conclusion/Summary

Skin : Corrosive.

Eyes : Causes serious eye damage.

Respiratory : Corrosive to the respiratory system.

Sensitization

Conclusion/Summary

Skin : Not sensitizing

Respiratory : Not sensitizing

Mutagenicity

Conclusion/Summary : No known significant effects or critical hazards.

Carcinogenicity

Product/ingredient name	Method	Species	Result	Exposure
Ammonia				
	OECD 453 Oral	Rat	Negative NOAEL 67 mg/kg bw/day	Not applicable.

Conclusion/Summary : No known significant effects or critical hazards.

Reproductive toxicity

Product/ingredient name	Method	Species	Result	Exposure
Ammonia				
	OECD 422 Oral	Rat	Fertility effects- Negative NOAEL 408 mg/kg bw/day	28 days
	OECD 414 Oral	Rabbit	Developmental- Negative NOAEL 100 mg/kg bw/day	28 days
	Inhalation	Pig	Developmental- Negative NOAEC 25 mg/m ³	6 weeks

Conclusion/Summary : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

No known significant effects or critical hazards.

Specific target organ toxicity (repeated exposure)

No known significant effects or critical hazards.

Aspiration hazard

No known significant effects or critical hazards.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage. Liquid can cause burns similar to frostbite.

Inhalation : Toxic if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns. Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

Ingestion : May cause burns to mouth, throat and stomach. Ingestion of liquid can cause burns similar to frostbite.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following: pain, watering, redness, frostbite (Cryogenic burn)

Inhalation : Adverse symptoms include the following: wheezing and breathing difficulties, asthma

Skin contact : Adverse symptoms may include the following: pain or irritation, frostbite (Cryogenic burn), blistering may occur

Ingestion : Adverse symptoms may include the following: frostbite (Cryogenic burn)

Delayed and immediate effects and also chronic effects from short and long term exposure**Short term exposure**

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : No known significant effects or critical hazards.

Effects on or via lactation : No known significant effects or critical hazards.

Other effects : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following: pain, watering, redness, frostbite (Cryogenic burn)

Inhalation : Adverse symptoms include the following: wheezing and breathing difficulties, asthma

- Skin contact** : Adverse symptoms may include the following: pain or irritation, frostbite (Cryogenic burn), blistering may occur
- Ingestion** : Adverse symptoms may include the following: frostbite (Cryogenic burn)

Numerical measures of toxicity**Acute toxicity estimates**

Product/ingredient name	Oral	Dermal	Inhalation (gases)	Inhalation (vapors)	Inhalation (dusts and mists)
Ammonia	N/A	N/A	700 ppm	3.9695 mg/l	N/A

Section 12. Ecological information**Toxicity**

Product/ingredient name	Method	Species	Result	Exposure
Ammonia				
	Acute LC50 Fresh water	Fish	0.89 mg/l	96 h
	Acute LC50 Fresh water	Daphnia	101 mg/l	48 h
	Acute EC50 Fresh water	Algae	3,283.2 mg/l	72 h
	Chronic NOEC Fresh water	Fish	0.0135 mg/l	60 d
	Chronic NOEC Fresh water	Daphnia	0.961 mg/l	21 d

- Conclusion/Summary** : Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Persistence and degradability

- Conclusion/Summary** : Readily biodegradable in plants and soils.

Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
Ammonia	0.23	Not applicable.	Low

- Conclusion/Summary** : No known significant effects or critical hazards.

Mobility in soil

- Soil/Water partition coefficient** : Not available.
- Mobility** : Not available.
- Other adverse effects** : No known significant effects or critical hazards.

Section 13. Disposal considerations**Product**

- Methods of disposal** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and

any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty pressure vessels should be returned to the supplier. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	UN1005	1005	1005
UN proper shipping name	AMMONIA, ANHYDROUS	AMMONIA, ANHYDROUS Marine pollutant (ammonia, anhydrous)	AMMONIA, ANHYDROUS
Transport hazard class(es)	2.2  	2.3   	2.3   
Packing group			
Environmental hazards	Yes.	Yes.	Yes.

Additional information

DOT Classification : Inhalation hazard

IMDG : **IMDG Code Segregation group** SG18
Emergency schedules (EmS) F-C, S-U

Special precautions for user : Transport within user's premises: Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments **Proper shipping name** : Not applicable.

Section 15. Regulatory information

United States

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
EPA Clean water act (CWA) section 311 - Hazardous substances: Ammonia;
EPA Clean air act (CAA) section 112 - Accidental release prevention - Toxic substances: AmmoniaAmmonia (anhydrous)Ammonia;

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302/304
AMMONIA	100	Yes.	SARA 302 TPQ: 500 lb(s) SARA 304 RQ: 100 lb(s)

SARA 304 RQ :

SARA 311/312

Classification : **FLAMMABLE GASES** - Category 2
GASES UNDER PRESSURE - Liquefied gas
ACUTE TOXICITY - inhalation - Category 3
SKIN CORROSION - Category 1B
SERIOUS EYE DAMAGE - Category 1

Composition/information on ingredients

Name	%	Classification
Ammonia	100	GASES UNDER PRESSURE - Compressed gas FLAMMABLE GASES - Category 2

ACUTE TOXICITY - inhalation - Category 3
 SKIN CORROSION - Category 1B
 SERIOUS EYE DAMAGE - Category 1

SARA 313**Form R - Reporting requirements**

Product name	CAS number	%
Ammonia	7664-41-7	100

Supplier notification

Product name	CAS number	%
Ammonia	7664-41-7	100

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

State regulations

- Massachusetts** : The following components are listed:
Ammonia
- New York** : None of the components are listed.
- New Jersey** : The following components are listed:
AMMONIAAmmonia
- Pennsylvania** : The following components are listed:
AMMONIAAmmonia

California Prop. 65

⚠ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

Inventory list

Philippines inventory (PICCS): All components are listed or exempted.

New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.

Korea inventory: All components are listed or exempted.

Japan inventory (CSCL): All components are listed or exempted.

Japan inventory (ISHL): All components are listed or exempted.

China inventory (IECSC): All components are listed or exempted.

Australia inventory (AIC): All components are listed or exempted.

Taiwan Chemical Substances Inventory (TCSI): All components are listed or exempted.

Taiwan Chemical Substances Inventory (TCSI): All components are listed or exempted.

United States inventory (TSCA 8b): All components are active or exempted.

EC INVENTORY (EINECS/ELINCS): All components are listed or exempted.

Canada: All components are listed or exempted.

Thailand: All components are listed or exempted.

Turkey: All components are listed or exempted.

Viet Nam: All components are listed or exempted.

Section 16. Other information**Hazardous Material Information System (U.S.A.)**

Health	/	3
Flammability		4

Physical hazards	3
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Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on MSDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

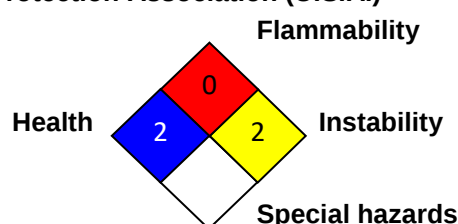
The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

Chronic toxicity:

- : No data available.

* : Carcinogen, Target organs, Reproductive effects, Sensitizer to lungs

National Fire Protection Association (U.S.A.)



Procedure used to derive the classification

Classification	Justification
FLAMMABLE GASES - Category 2	Expert judgment
GASES UNDER PRESSURE - Liquefied gas	On basis of test data
ACUTE TOXICITY (inhalation) - Category 3	Calculation method
SKIN CORROSION - Category 1B	Calculation method
SERIOUS EYE DAMAGE - Category 1	Calculation method
AQUATIC HAZARD (ACUTE) - Category 1	Calculation method
AQUATIC HAZARD (LONG-TERM) - Category 2	Calculation method

History

Date of printing : 07/14/2025
Date of issue/Date of revision : 06/27/2025
Date of previous issue : 06/17/2022
Revision comments : The following section contains updated information: 2,12,14

Version : 2.0
Prepared by : Product Stewardship and Compliance (PSC).
Key to abbreviations :
 ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of

Date of issue : 06/27/2025

Page:15/16

Key data sources

1978. ("Marpol" = marine pollution)
 N/A = Not available
 SGG = Segregation Group
 UN = United Nations
- : EU REACH ECHA/IUCLID5 CSR.
 National Institute for Occupational Safety and Health, U.S.
 Dept. of Health, Education, and Welfare, Reports and
 Memoranda Registry of Toxic Effects of Chemical
 Substances.
 Sphera Solutions Inc., 4777 Levy Street, St Laurent, Quebec
 HAR 2P9, Canada.
 EU REACH ECHA/IUCLID5 CSR.
 National Institute for Occupational Safety and Health, U.S.
 Dept. of Health, Education, and Welfare, Reports and
 Memoranda Registry of Toxic Effects of Chemical
 Substances.
 Sphera Solutions Inc., 4777 Levy Street, St Laurent, Quebec
 HAR 2P9, Canada.

|| Indicates information that has changed from previously issued version.

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.

Safety Data Sheet



SECTION 1 IDENTIFICATION

DIESEL FUEL (GENERIC)

Recommended Use: Fuel

Restrictions on Use: Consult supplier when used other than those specified.

Other means of identification: Not applicable

Company Identification

Chevron Products Company

1400 Smith Street

Houston, TX 77002

United States of America

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

Chevron Emergency & Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

SDS Requests: <http://www.chevron.com/contact/>

Technical Information: (510) 242-5357

SPECIAL NOTES: This SDS covers all Chevron, Texaco and Calco CARB & non-CARB Diesel No. 2 Fuels. The sulfur content is less than 0.5% (mass). Red dye is added to non-taxable fuel. (SDS 6894)

SPECIAL NOTES: This SDS covers all Chevron and Calco CARB Low Sulfur Diesel No. 2 Fuels. Red dye is added to non-taxable fuel. (SDS 7098)

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION:

- Flammable liquid: Category 3.
- Acute inhalation toxicant: Category 4.
- Aspiration toxicant: Category 1.
- Carcinogen: Category 1B.
- Skin irritation: Category 2.
- Target organ toxicant (central nervous system): Category 3.
- Target organ toxicant (repeated exposure): Category 2.
- Acute aquatic toxicant: Category 2.
- Chronic aquatic toxicant: Category 2.



Signal Word: Danger

Physical Hazards:

- Flammable liquid and vapour.

Health Hazards:

- May be fatal if swallowed and enters airways.
- Causes skin irritation.
- Harmful if inhaled.
- May cause drowsiness or dizziness.
- May cause cancer.
- May cause damage to organs (Blood/Blood Forming Organs, Liver, Thymus) through prolonged or repeated exposure.

Environmental Hazards:

- Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

General:

- Keep out of reach of children.
- Read label before use.

Prevention:

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat, sparks, open flames, and hot surfaces. - No smoking.
- Keep cool.
- Ground and bond container and receiving equipment.
- Use explosion-proof electrical, ventilating, lighting, and equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Do not breathe fume, gas, mist, vapours, or spray.
- Wash thoroughly after handling.
- Use only outdoors or in a well-ventilated area.
- Avoid release to the environment.
- Wear protective gloves, protective clothing, eye protection, and face protection.

Response:

- IF SWALLOWED: Immediately call a POISON CENTER, doctor, or physician.
- IF ON SKIN: Wash with plenty of soap and water.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF exposed or concerned: Get medical advice or attention.
- Specific treatment (see Notes to Physician on this label).
- Do NOT induce vomiting.
- If skin irritation occurs: Get medical advice or attention.
- Take off contaminated clothing and wash it before reuse.
- In case of fire: Use media specified in the SDS to extinguish.
- Collect spillage.

Storage:

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

Disposal:

- Dispose of contents and container in accordance with applicable local, regional, national, and international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Diesel Fuel No. 2	68476-34-6	95 - 100 %vol/vol
Alkanes, C10-20-branched and linear	928771-01-1	0 - 5 %vol/vol
Fatty Acid Methyl Esters (FAME)	Mixture	0 - 5 %vol/vol
Naphthalene	91-20-3	0.02 - 0.2 %vol/vol
Total sulfur	Mixture	0 - 5000 ppm (weight)

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue or if any other symptoms develop.

Most important symptoms and effects, both acute and delayed

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin causes irritation. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response.

Ingestion: Highly toxic; may be fatal if swallowed. Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.

Inhalation: Harmful if inhaled. Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:

Cancer: Whole diesel engine exhaust has been classified as a Group 1 carcinogen (probably carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Prolonged or repeated exposure to this material may cause cancer. Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Target Organs: Contains material that may cause damage to the following organ(s) following repeated inhalation at concentrations above the recommended exposure limit based on animal data: Liver Blood/Blood Forming Organs Thymus See Section 11 for additional information. Risk depends on duration and level of exposure.

Indication of any immediate medical attention and special treatment needed

Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

UNSUITABLE EXTINGUISHING MEDIA: No data available

Unusual Fire Hazards: See Section 7 for proper handling and storage.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Observe all relevant local and international regulations. Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator. Keep out unnecessary and unprotected personnel. Persons entering the contaminated area to correct the problem or to determine whether it is safe to resume normal activities must comply with all instructions and wear appropriate personal protective equipment as indicated in Section 8.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: This material presents a fire hazard. Liquid quickly evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above -10C (15F). Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Do not breathe mist. Wash thoroughly after handling. Keep out of the reach of children.

Unusual Handling Hazards: WARNING! Do not use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death. Slow heat generation may occur with oil-soaked rags, spent filter aids and spent absorbent material and may cause spontaneous combustion if stored near combustibles and not handled properly. Store biodiesel soaked rags, filter aids, and spill absorbent material in approved safety disposal containers and dispose of properly. Biodiesel soaked rags may be washed with soap and water and allowed to dry in well ventilated area.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by

themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces .
USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the workplace when designing engineering controls and selecting personal protective equipment (PPE). If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, refer to PPE information below.

Factors that affect PPE include, but are not limited to: properties of the chemical, other chemicals which may contact the same PPE, physical requirements (fit & sizing, cut/puncture protection, dexterity, thermal protection, etc.), and potential allergic reactions to the PPE material. It is the responsibility of the user to read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.

ENGINEERING CONTROLS:

Use general ventilation, local exhaust ventilation, or a combination of both.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: Wear protective equipment to prevent eye contact. Selection of protective equipment may include safety glasses, chemical goggles, face shields, or a combination depending on the work operations conducted.

Skin Protection: Wear chemical personal protective equipment (PPE) to prevent skin contact. Selection of chemical protective clothing should be performed by an Occupational Hygienist or Safety Professional and be based upon applicable standards (ASTM F739 or EN 374). Using chemical PPE depends upon operations conducted and may include chemical gloves, boots, chemical apron, chemical suit, and complete facial protection. **Refer to PPE manufacturers to obtain breakthrough time information to determine how long PPE can be used before it needs to be replaced.** Unless specific glove manufacturer data indicates otherwise, the below table is based upon available industry data to assist in the glove selection process and is intended to be used as reference only.

Chemical Glove Material	Thickness (mm)	Typical Breakthrough Time (minutes)
Neoprene	1.4	30
Nitrile	0.5	60
Nitrile	0.11	7
Polyvinyl Chloride (PVC)	1.5	30
Viton Butyl	0.3	240

Respiratory Protection: A site-specific risk assessment should be conducted by an Occupational

Hygienist or a Safety Professional to determine the type and use of respiratory protective equipment. When a site-specific risk assessment determines that respiratory protection is required, use an approved respirator such as:

Air purifying respirator -

If airborne concentration limits exceed the applicable occupational exposure limit, but are below the maximum use concentration.

Vapors only: organic vapor cartridge (filter type A3 per EN 529:2005).

Vapors and particulates (including generated mists): both an organic vapor cartridge & particulate filter (AP3 filter per EN 529:2005).

Refer to respirator manufacturers to obtain service life of cartridge / filter.

Positive pressure air-supplying respirator -

If airborne concentration limits exceed the maximum use concentration offered from an air purifying respirator.

Refer to EN 529:2005, USA OSHA 1910.134, and/or other applicable local/regional/national/international standards for regulatory requirements.

Occupational Exposure Limits:

Component	Agency	Form	TWA	STEL	Ceiling	Notation
Diesel Fuel No. 2	ACGIH	Inhalable fraction and vapor	100 mg/m3	--	--	Skin total hydrocarbon
Diesel Fuel No. 2	ACGIH	Vapor	100 mg/m3	--	--	Skin
Diesel Fuel No. 2	ACGIH	Vapor and aerosol	100 mg/m3	--	--	Skin total hydrocarbon
Diesel Fuel No. 2	CVX	Vapor and aerosol	100 mg/m3	--	--	Skin total hydrocarbon
Naphthalene	ACGIH	--	10 ppm	--	--	Skin
Naphthalene	ACGIH	Vapor	10 ppm	15 ppm	--	A4 Skin
Naphthalene	OSHA Z-1	--	50 mg/m3	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Varies depending on specification

Physical State: Liquid

Odor: Petroleum odor

Odor Threshold: No data available

pH: Not Applicable

Vapor Pressure: 0.04 kPa (Approximate) @ 40 °C (104 °F)

Relative Vapor Density: >1

Initial Boiling Point: 175.6°C (348°F) - 370°C (698°F)

Solubility: Soluble in hydrocarbons; insoluble in water

Freezing Point: Not Applicable

Melting Point: Not Applicable

Specific Gravity: 0.80 - 0.88 @ 15.6°C (60.1°F) (Typical)

Particle Characteristics: Not applicable

Density: No data available

Kinematic Viscosity: 1.9 cSt - 4.1 cSt @ 40°C (104°F)

Evaporation Rate: No data available

Decomposition temperature: No data available

Partition coefficient n-octanol/water (logarithmic value): No data available

FLAMMABLE PROPERTIES:

Flammability (solid, gas): No Data Available

Flashpoint: (Pensky-Martens Closed Cup) 52 °C (125 °F) (Minimum)

Autoignition: 257 °C (494 °F)

Flammability (Explosive) Limits (% by volume in air): Lower: 0.6 Upper: 4.7

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Conditions to Avoid: Avoid contact with heat, sparks, fire and oxidizing agents

Possibility of Hazardous Reactions: Hazardous polymerization will not occur. May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Incompatibility With Other Materials: Not applicable

Hazardous Decomposition Products: None known (None expected)

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Serious Eye Damage/Irritation: The material is not considered an eye irritant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Skin Corrosion/Irritation: This material causes skin irritation. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Skin Sensitization: The material is not considered a skin sensitizer. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Dermal Toxicity: The material is not considered a dermal toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Oral Toxicity: The material is not considered an oral toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Inhalation Toxicity: This material is harmful if inhaled. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The material is not considered a mutagen. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Carcinogenicity: This material may cause cancer. The product has not been tested. The statement is based on evaluation of data for similar materials or product components. Whole diesel engine exhaust has been classified as a Group 1 carcinogen (probably carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Reproductive Toxicity: The material is not considered a reproductive toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Single Exposure: This material may cause drowsiness or dizziness. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Repeated Exposure: This material may cause damage to organs through prolonged or repeated exposure. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Aspiration Hazard: This material is considered an aspiration hazard based on the kinematic viscosity of the material.

ADDITIONAL TOXICOLOGY INFORMATION:

The National Institute of Occupational Safety and Health (NIOSH) has recommended that whole diesel exhaust be regarded as potentially causing cancer. This recommendation was based on test results showing increased lung cancer in laboratory animals exposed to whole diesel exhaust.

This product contains gas oils.

CONCAWE (product dossier 95/107) has summarized current health, safety and environmental data available for a number of gas oils, typically hydrosulfurized middle distillates, CAS 64742-80-9, straight-run middle distillates, CAS 64741-44-2, and/or light cat-cracked distillate CAS 64741-59-9.

CARCINOGENICITY: All materials tested have caused the development of skin tumors in mice, but all featured severe skin irritation and sometimes a long latency period before tumors developed. Straight-run and cracked gas oil samples were studied to determine the influence of dermal irritation on the carcinogenic activity of middle distillates. At non-irritant doses the straight-run gas oil was not carcinogenic, but at irritant doses, weak activity was demonstrated. Cracked gas oils, when diluted with mineral oil, demonstrated carcinogenic activity irrespective of the occurrence of skin irritation. Gas oils were tested on male mice to study tumor initiating/promoting activity. The results demonstrated that while a straight-run gas oil sample was neither an initiator or promotor, a blend of straight-run and FCC stock was both a tumor initiator and a promoter.

GENOTOXICITY: Hydrotreated & hydrosulfurized gas oils range in activity from inactive to weakly positive in in-vitro bacterial mutagenicity assays. Mouse lymphoma assays on straight-run gas oils without subsequent hydrosulfurization gave positive results in the presence of S9 metabolic activation. In-vivo bone marrow cytogenetics and sister chromatid exchange assay exhibited no activity for straight-run components with or without hydrosulfurization. Thermally or catalytically cracked gas oils tested with in-vitro bacterial mutagenicity assays in the presence of S9 metabolic activation were shown to be mutagenic. In-vitro sister chromatid exchange assays on cracked gas oil gave equivocal results both with and without S9 metabolic activation. In-vivo bone marrow cytogenetics assay was inactive for two cracked gas oil samples. Three hydrocracked gas oils were tested with in-vitro bacterial mutagenicity assays with S9, and one of the three gave positive results. Twelve distillate fuel samples were tested with in-vitro bacterial mutagenicity assays & with S9 metabolic activation and showed negative to weakly positive results. In one series, activity was shown to be related to the PCA content of samples tested. Two in-vivo studies were also conducted. A mouse dominant lethal assay was negative for a sample of diesel fuel. In the other study, 9 samples of No 2 heating oil containing 50% cracked stocks caused a slight increase in the number of chromosomal aberrations in bone marrow cytogenetics assays. **DEVELOPMENTAL TOXICITY:** Diesel fuel vapor did not cause fetotoxic or teratogenic effects when pregnant rats were exposed on days 6-15 of pregnancy. Gas oils were applied to the skin of pregnant rats daily on days 0-19 of gestation. All but one (coker light gas oil) caused fetotoxicity (increased resorptions, reduced litter weight, reduced litter size) at dose levels that were also maternally toxic.

This product contains naphthalene.

GENERAL TOXICITY: Exposure to naphthalene has been reported to cause methemoglobinemia and/or hemolytic anemia, especially in humans deficient in the enzyme glucose-6-phosphate dehydrogenase. Laboratory animals given repeated oral doses of naphthalene have developed cataracts.

REPRODUCTIVE TOXICITY AND BIRTH DEFECTS: Naphthalene did not cause birth defects when administered orally to rabbits, rats, and mice during pregnancy, but slightly reduced litter size in mice at dose levels that were lethal to the pregnant females. Naphthalene has been reported to cross the human placenta. **GENETIC TOXICITY:** Naphthalene caused chromosome aberrations and sister chromatid exchanges in Chinese hamster ovary cells, but was not a mutagen in several other in-vitro tests.

CARCINOGENICITY: In a study conducted by the National Toxicology Program (NTP), mice exposed to 10 or 30 ppm of naphthalene by inhalation daily for two years had chronic inflammation of the nose and lungs and increased incidences of metaplasia in those tissues. The incidence of benign lung tumors (alveolar/bronchiolar adenomas) was significantly increased in the high-dose female group but not in the male groups. In another two-year inhalation study conducted by NTP, exposure of rats to 10, 30, and 60 ppm naphthalene caused increases in the incidences of a variety of nonneoplastic lesions in the nose. Increases in nasal tumors were seen in both sexes, including olfactory neuroblastomas in females at 60 ppm and adenomas of the respiratory epithelium in males at all exposure levels. The relevance of these effects to humans has not been established. No carcinogenic effect was reported in a 2-year feeding study in rats receiving naphthalene at 41 mg/kg/day.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment. A series of studies on the acute toxicity of 4 diesel fuel samples were conducted by one laboratory using water accommodated fractions. The range of effective (EC50) or lethal concentrations (LC50) expressed as loading rates were:

48 hour(s) EC50: 20-210 mg/l (Daphnia magna)

96 hour(s) LC50: 21-210 mg/l (Salmo gairdneri)

72 hour(s) EC50: 2.6-25 mg/l (Selenastrum capricornutum)

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is not expected to be readily biodegradable. On release to the environment the lighter components of diesel fuel will generally evaporate but depending on local environmental conditions (temperature, wind, mixing or wave action, soil type, etc.) the remainder may become dispersed in the water column or absorbed to soil or sediment. Diesel fuel would not be expected to be readily biodegradable. In a modified Strum test (OECD method 301B) approximately 40% biodegradation was recorded over 28 days. However, it has been shown that most hydrocarbon components of diesel fuel are degraded in soil in the presence of oxygen. Under anaerobic conditions, such as in anoxic sediments, rates of biodegradation are negligible.

The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.

Partition coefficient n-octanol/water (logarithmic value): No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: For packages with an Initial Boiling Point > 35 deg C and a Flash Point (PM Closed Cup) >= 23 deg C but <= 60 deg C: UN1202, GAS OIL, 3, III; OPTIONAL DISCLOSURE: UN1202, GAS OIL, 3, III, MARINE POLLUTANT (DIESEL FUEL) Optional disclosure per 49 CFR when Flash Point (PM Closed Cup) >= 38 deg C < 93 deg C per 49 173.150 (f): UN1202, GAS OIL, COMBUSTIBLE LIQUID, III; NON-BULK PACKAGES ARE EXEMPTED FROM THE PROVISIONS OF 49 CFR IN USA JURISDICTIONS Optional disclosure as a GHS Environmental Hazard/Marine Pollutant when Flash Point (PM Closed Cup) > 60 deg C: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(DIESEL FUEL), 9, III, MARINE POLLUTANT (DIESEL FUEL)

IMO/IMDG Shipping Description: For packages with an Initial Boiling Point > 35 deg C and a Flash Point (PM Closed Cup) >= 23 deg C, <= 60 deg C: UN1202, GAS OIL, 3, III, FLASH POINT SEE SECTION 5 OR 9, MARINE POLLUTANT (DIESEL FUEL); OPTIONAL DISCLOSURE: UN1268, PETROLEUM DISTILLATES, N.O.S. (DIESEL FUEL), 3, III, FLASH POINT SEE SECTION 5 OR 9, MARINE POLLUTANT (DIESEL FUEL) For packages with a Flash Point (PM Closed Cup) > 60 deg C: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (DIESEL FUEL), 9, III, MARINE POLLUTANT (DIESEL FUEL)

ICAO/IATA Shipping Description: For packages with an Initial Boiling Point > 35 deg C and a Flash Point (PM Closed Cup) >= 23 deg C, <= 60 deg C: UN1202, GAS OIL, 3, III For packages with a Flash Point (PM Closed Cup) > 60 deg C: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (DIESEL FUEL), 9, III, MARINE POLLUTANT (DIESEL FUEL)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:

Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:

Acute toxicity (any route of exposure)

Aspiration Hazard

Carcinogenicity

Flammable (gases, aerosols, liquids, or solids)

Skin Corrosion or Irritation

Specific target organ toxicity (single or repeated exposure)

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	05=MA RTK
01-2A=IARC Group 2A	06=NJ RTK
01-2B=IARC Group 2B	07=PA RTK
02=NTP Carcinogen	08-1=TSCA 5(e)
03=EPCRA 313	08-2=TSCA 12(b)
04=CA Proposition 65	

The following components of this material are found on the regulatory lists indicated.

Naphthalene 01-2A, 01-2B, 02, 03, 04, 05, 06, 07

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AIIIC (Australia), DSL (Canada), IECSC (China), NZIoC (New Zealand), TCSI (Taiwan), TSCA (United States).

One or more components does not comply with the following chemical inventory requirements: EINECS (European Union), ENCS (Japan), KECI (Korea), PICCS (Philippines).

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: DIESEL FUEL

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 2 Flammability: 2 Reactivity: 0

HMIS RATINGS: Health: 2* Flammability: 2 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: This revision updates the following sections of this Safety Data Sheet: 1 - 16.

Revision Date: April 25, 2025

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	PNOS - Particles Not Otherwise Specified

Prepared according to the 29 CFR 1910.1200 (2024) by Chevron.

The information in this SDS is based on the knowledge, information, and belief of Chevron and its affiliates as of the publication date. It is not a quality specification, and no warranty, express or implied, is given. We assume no responsibility or liability for the results of using this material. The information presented here pertains only to the listed product. Since conditions of use are beyond our control, it is the user's responsibility to determine the conditions for safe use of this product and assess its suitability for their application. Users should seek additional guidance if necessary.



SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

Product name: N-Methyldiethanolamine (MDEA)

Issue Date: 07/20/2022

Print Date: 07/21/2022

THE DOW CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: N-Methyldiethanolamine (MDEA)

Recommended use of the chemical and restrictions on use

Identified uses: Chemical intermediate. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

COMPANY IDENTIFICATION

THE DOW CHEMICAL COMPANY
2211 H.H. DOW WAY
MIDLAND MI 48674
UNITED STATES

Customer Information Number:

800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: CHEMTREC +1 800-424-9300

Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Eye irritation - Category 2A

Label elements

Hazard pictograms



Signal word: **WARNING!**

Hazards

Causes serious eye irritation.

Precautionary statements**Prevention**

Wash skin thoroughly after handling.

Wear eye protection/ face protection.

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/ attention.

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: 2,2'-methyliminodiethanol

This product is a substance.

Substance name: Methyldiethanolamine

CASRN: 105-59-9

Component	CASRN	Concentration
Methyldiethanolamine	105-59-9	>= 99.0 - <= 100.0 %
Diethanolamine	111-42-2	<= 0.1 %

4. FIRST AID MEASURES

Description of first aid measures**General advice:**

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air and keep comfortable for breathing; consult a physician.

Skin contact: Wash off with plenty of water. Suitable emergency safety shower facility should be available in work area.

Eye contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed:

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide..

Unsuitable extinguishing media: None known..

Special hazards arising from the substance or mixture

Hazardous combustion products: No data available

Unusual Fire and Explosion Hazards: Exposure to combustion products may be a hazard to health..

Advice for firefighters

Fire Fighting Procedures: Use water spray to cool unopened containers.. Evacuate area.. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations..

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Remove undamaged containers from fire area if it is safe to do so.

Special protective equipment for firefighters: In the event of fire, wear self-contained breathing apparatus.. Use personal protective equipment..

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.

Environmental precautions: Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up: Do NOT use absorbent materials such as: Cellulose-based absorbents. Sawdust Ground corn cobs. Soak up with inert absorbent material. Absorb with inert materials such as: Clay-based absorbents. Dirt. Sand. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container. See sections: 7, 8, 11, 12 and 13.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid inhalation of vapour or mist. Do not swallow. Do not get in eyes. Avoid prolonged or repeated contact with skin. Take care to prevent spills, waste and minimize release to the environment. Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Suspected cancer-causing nitrosamines could be formed. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. Handle in accordance with good industrial hygiene and safety practice. CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied. Use only with adequate ventilation. See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Conditions for safe storage: Keep in properly labelled containers. Do not store with: Strong acids. Strong bases Combustible liquid. Store in accordance with the particular national regulations.

Storage stability

Storage Period:

Drum

24 Month

Bulk

6 Month

Do not store with the following product types: Strong oxidizing agents.

Unsuitable materials for containers: Aluminium Copper Copper alloys Galvanized containers. Zinc

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value
Diethanolamine	Dow IHG	TWA	0.2 mg/m3
	Further information: SKIN: Absorbed via skin		
	ACGIH	TWA Inhalable fraction and vapor	1 mg/m3
	Further information: A3: Confirmed animal carcinogen with unknown relevance to humans; Skin: Danger of cutaneous absorption		

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure

limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Chlorinated polyethylene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl alcohol ("PVA"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, if material is heated or sprayed, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	Liquid.
Color	Colorless
Odor	Ammoniacal
Odor Threshold	No test data available
pH	10.4 <i>Literature</i> 1% aqueous solution.
Melting point/range	Not applicable to liquids
Freezing point	-21 °C (-6 °F) <i>Literature</i>
Boiling point (760 mmHg)	243.3 °C (469.9 °F) at 1,013 hPa <i>Literature</i>
Flash point	closed cup 138 °C (280 °F) <i>Pensky-Martens Closed Cup ASTM D 93</i>
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Flammability (liquids)	Not expected to be a static-accumulating flammable liquid.
Lower explosion limit	1.4 % vol <i>Literature</i>
Upper explosion limit	10 % vol <i>Literature</i>

Vapor Pressure	0.004 mmHg at 20 °C (68 °F) <i>Literature</i>
Relative Vapor Density (air = 1)	4.1 <i>Literature</i>
Relative Density (water = 1)	1.041 at 20 °C (68 °F) / 20 °C <i>Literature</i>
Water solubility	at 20 °C (68 °F) <i>Literature</i> completely miscible
Partition coefficient: n-octanol/water	log Pow: -1.08 <i>Measured</i>
Auto-ignition temperature	280 °C (536 °F) <i>Literature</i>
Decomposition temperature	No data available
Dynamic Viscosity	101 cP at 20 °C (68 °F) <i>Literature</i>
Kinematic Viscosity	No test data available
Explosive properties	Not explosive
Oxidizing properties	No
Liquid Density	1.04 g/cm ³ at 20 °C (68 °F) <i>Estimated.</i>
Molecular weight	119.16 g/mol <i>Calculated.</i>

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions: Can react with strong oxidizing agents.

Conditions to avoid: None known.

Incompatible materials: Heating above 60°C in the presence of aluminum can result in corrosion and generation of flammable hydrogen gas. Avoid contact with oxidizing materials. Avoid contact with: Acids Halogenated hydrocarbons Nitrites. Strong oxidizers. Combustible liquid. Avoid contact with metals such as: Aluminum. copper Galvanised metals Zinc.

Hazardous decomposition products:

Decomposition products can include and are not limited to: Nitrogen.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Information on likely routes of exposure

Inhalation, Eye contact, Skin contact, Ingestion.

Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)

Acute oral toxicity

Information for the Product:

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

Based on product testing:

LD50, Rat, male and female, 4,680 mg/kg

Information for components:**Methyldiethanolamine**

LD50, Rat, male and female, 4,680 mg/kg

Diethanolamine

LD50, Rat, male and female, 1,600 mg/kg OECD 401 or equivalent

Acute dermal toxicity**Information for the Product:**

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.

Information for components:**Methyldiethanolamine**

LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.

Diethanolamine

LD50, Rabbit, male, > 8,200 mg/kg

Acute inhalation toxicity**Information for the Product:**

At room temperature, exposure to vapor is minimal due to low volatility. If material is heated or aerosol/mist is produced, concentrations may be attained that are sufficient to cause respiratory irritation and other effects.

LC0, No deaths occurred following exposure to a saturated atmosphere.

Information for components:**Methyldiethanolamine**

No deaths occurred following exposure to a saturated atmosphere.

Diethanolamine

LC0, Rat, male, 4 Hour, dust/mist, 3.35 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation**Information for the Product:**

Based on product testing:

Brief contact may cause slight skin irritation with local redness.

Prolonged contact may cause moderate skin irritation with local redness.

Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.

May cause more severe response if skin is abraded (scratched or cut).

May cause more severe response on covered skin (under clothing, gloves).

Information for components:**Methyldiethanolamine**

Brief contact may cause slight skin irritation with local redness.

Prolonged contact may cause moderate skin irritation with local redness.

Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.

May cause more severe response if skin is abraded (scratched or cut).

May cause more severe response on covered skin (under clothing, gloves).

Diethanolamine

Prolonged contact may cause skin irritation with local redness.

Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.

May cause more severe response if skin is abraded (scratched or cut).

Serious eye damage/eye irritation**Information for the Product:**

Based on product testing:

May cause severe eye irritation.

May cause corneal injury.

Information for components:**Methyldiethanolamine**

May cause severe eye irritation.

May cause corneal injury.

Diethanolamine

May cause severe eye irritation.

May cause severe corneal injury.

Effects may be slow to heal.

Sensitization**Information for the Product:**

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

Information for components:

Methyldiethanolamine

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Diethanolamine

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Information for the Product:

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Information for components:

Methyldiethanolamine

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Diethanolamine

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Aspiration Hazard

Information for the Product:

Based on physical properties, not likely to be an aspiration hazard.

Information for components:

Methyldiethanolamine

Based on physical properties, not likely to be an aspiration hazard.

Diethanolamine

Based on physical properties, not likely to be an aspiration hazard.

Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Information for the Product:

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Information for components:

Methyldiethanolamine

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Diethanolamine

Results from repeated exposure tests on diethanolamine in laboratory animals include anemia (rats) and effects on kidney (rats and mice) and liver (mice). Heart and nervous system effects were also observed in animals given exaggerated doses of diethanolamine. Changes in other organs, causes of which are nonspecific, were judged secondary to the poor health of the animals due to the extremely high doses of diethanolamine given.

Carcinogenicity**Information for the Product:**

No relevant data found.

Information for components:**Methyldiethanolamine**

No relevant data found.

Diethanolamine

Findings from a chronic diethanolamine skin painting study by NTP include liver and kidney tumors in mice; no tumors were observed in rats. Mechanistic studies indicate that tumor formation is of questionable relevance to humans. A number of factors may have influenced the results and are being considered in their interpretation.

Carcinogenicity**Component****Diethanolamine****List**

IARC

ACGIH

Classification

Group 2B: Possibly carcinogenic to humans

A3: Confirmed animal carcinogen with unknown relevance to humans.

Teratogenicity**Information for the Product:**

Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Information for components:**Methyldiethanolamine**

Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Diethanolamine

Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

Reproductive toxicity**Information for the Product:**

In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Information for components:**Methyldiethanolamine**

In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Diethanolamine

In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. Repeated excessive exposures to high amounts may cause effects on testes and fertility in males.

Mutagenicity**Information for the Product:**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Information for components:**Methyldiethanolamine**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Diethanolamine

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity**Acute toxicity to fish**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, *Leuciscus idus* (Golden orfe), static test, 96 Hour, 1,466 mg/l, DIN 38412

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), static test, 48 Hour, 233 mg/l

Acute toxicity to algae/aquatic plants

EC50, *Desmodesmus subspicatus* (green algae), static test, 72 Hour, Growth rate inhibition, > 100 mg/l

Persistence and degradability

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

Biodegradation: 96 %

Exposure time: 18 d
Method: OECD Test Guideline 301A or Equivalent
10-day Window: Not applicable
Biodegradation: 94 %
Exposure time: 7 d
Method: OECD Test Guideline 302B or Equivalent

Theoretical Oxygen Demand: 2.29 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	40 %
28 d	42 %

Photodegradation

Test Type: Half-life (indirect photolysis)
Sensitization: OH radicals
Atmospheric half-life: 1.324 Hour
Method: Estimated.

Bioaccumulative potential

Bioaccumulation: Bioconcentration potential is low ($BCF < 100$ or $\log Pow < 3$).
Partition coefficient: n-octanol/water(log Pow): -1.08 Measured

Mobility in soil

Partition coefficient (Koc): 53 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. FOR UNUSED AND UNCONTAMINATED PRODUCT, always send to a licensed disposer per applicable regulations. Consult the local waste disposal expert for the appropriate waste disposal method. Recover or recycle, if possible. Otherwise, send it to a licensed disposer.

Contaminated packaging: Empty containers retain product residues. Follow label warnings even after container is emptied. Improper disposal or reuse of this container may be dangerous and illegal. Refer to applicable federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

**Transport in bulk
according to Annex I or II
of MARPOL 73/78 and the
IBC or IGC Code**

Not regulated for transport
Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Serious eye damage or eye irritation

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Pennsylvania Worker and Community Right-To-Know Act:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Prop. 65

WARNING: This product can expose you to chemicals including Diethanolamine, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

United States TSCA Inventory (TSCA)

All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Product Literature

Additional information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure. Additional information on this and other products may be obtained by visiting our web page.

Hazard Rating System**NFPA**

Health	Flammability	Instability
2	1	0

Revision

Identification Number: 11113439 / A001 / Issue Date: 07/20/2022 / Version: 9.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
TWA	8-hour, time-weighted average

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

THE DOW CHEMICAL COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

US

Natural Gas

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

Issue date: 2023-08-15

Revision date: 2023-08-15

Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Mixture
 Product name : Natural Gas
 Other means of identification : Methane, Sweet Gas, fuel Gas, Pipeline Spec Gas, Sales Gas, Dry Natural Gas, Compressed Gas, CH₄

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Fuel

1.3. Supplier

Manufacturer

Enbridge Inc. Including Enbridge Legal Entities: Algonquin Gas Transmission, LLC; Alliance Pipeline LP; Big Sandy Pipeline, LLC; Brazoria Interconnector Gas Pipeline, LLC; East Tennessee Natural Gas, LLC; Enbridge Offshore (Gas Transmission) LLC; Maritimes & Northeast Pipeline, LLC; NEXUS Gas Transmission, LLC; Texas Eastern Transmission, LP; Port Barre Investments, LLC; Sabal Trail Transmission, LLC; Southeast Supply Header, LLC; Valley Crossing Pipeline, LLC; Vector Pipeline, L.P.

Suite 1100, 915 North Eldridge Parkway

Houston, Texas 77079

www.enbridge.com

1.4. Emergency telephone number

24x7 Emergency Contact Number: 1-800-231-7794

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS classification

Flammable Gases - Category 1
 Gases Under Pressure - Compressed Gas
 Simple Asphyxiants

2.2. GHS Label elements, including precautionary statements

GHS labelling

Hazard pictograms (GHS)



Signal word (GHS)

: Danger

Hazard statements (GHS)

: Extremely flammable gas.

Contains gas under pressure; may explode if heated.

May displace oxygen and cause rapid suffocation

Precautionary statements (GHS)

: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

Eliminate all ignition sources if safe to do so.

Store in a well-ventilated place.

Protect from sunlight. Store in a well-ventilated place.

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2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Chemical name / Synonyms	Product identifier	%
Natural gas	Natural gas Gas, natural / Synthetic natural gas / Natural gases / Natural gas (Raw natural gas, as found in nature, or a gaseous combination of hydrocarbons having carbon numbers predominantly in the range of C1-4 separated from raw natural gas by the removal of natural gas condensate, natural gas liquid, and natural gas condensate/natural gas.) / Compressed natural gas / Liquified natural gas	CAS-No.: 8006-14-2	80 – 100
Methane	Methane Marsh gas / Methyl hydride / Methane, compressed / Monomethylamine	CAS-No.: 74-82-8	80 – 100
Ethane	Ethane Ethyl hydride / ETHANE	CAS-No.: 74-84-0	1 – 5
Propane	Propane n-Propane / R290 / PROPANE / Normal propane	CAS-No.: 74-98-6	1 – 5
n-Butane	n-Butane Butane / BUTANE	CAS-No.: 106-97-8	1 – 5
Nitrogen	Nitrogen Nitrogen gas / Nitrogen, liquefied / NITROGEN / Nitrogen, compressed / nitrogen	CAS-No.: 7727-37-9	1 – 5
Carbon dioxide	Carbon dioxide Dry ice / CARBON DIOXIDE	CAS-No.: 124-38-9	1 – 5
n-Pentane	n-Pentane Pentane / Normal pentane / PENTANE / Pentane, n-	CAS-No.: 109-66-0	1 – 5

*Chemical name, CAS number and/or exact concentration have been withheld as a trade secret

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation	: If inhaled and if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Give oxygen or artificial respiration if necessary. Call a POISON CENTER/doctor if you feel unwell.
First-aid measures after skin contact	: If skin irritation occurs: Wash skin with plenty of water. Obtain medical attention if irritation persists.

Natural Gas

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According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

First-aid measures after eye contact	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
First-aid measures after ingestion	: Not a normal route of exposure. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical advice/attention if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation	: May cause irritation to the respiratory tract. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Symptoms of oxygen deficiency include respiratory difficulty, headache, dizziness, nausea, unconsciousness or death.
Symptoms/effects after skin contact	: May cause skin irritation. Repeated exposure may cause skin dryness or cracking.
Symptoms/effects after eye contact	: May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
Symptoms/effects after ingestion	: Not a normal route of exposure. May be harmful if swallowed. May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

4.3. Immediate medical attention and special treatment, if necessary

Symptoms may be delayed. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Dry chemical. Water spray, fog, foam, carbon dioxide.
Unsuitable extinguishing media	: None known.

5.2. Specific hazards arising from the chemical

Fire hazard	: Extremely flammable gas. Products of combustion may include, and are not limited to: oxides of carbon.
Explosion hazard	: May form flammable/explosive vapour-air mixture. Ruptured cylinders may rocket.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Move containers away from the fire area if this can be done without risk. Cool closed containers exposed to fire with water spray.
Protection during firefighting	: Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Use special care to avoid static electric charges. Eliminate every possible source of ignition.
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6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Avoid release to the environment. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Natural Gas

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

6.3. Methods and material for containment and cleaning up

- For containment : Stop leak if safe to do so. Remove all sources of ignition. Wear recommended personal protective equipment.
- Methods for cleaning up : Ventilate the area thoroughly, especially low lying areas (basements, workpits etc)

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Additional hazards when processed : Handle empty containers with care because residual vapours are flammable.
- Precautions for safe handling : Avoid contact with skin and eyes. Do not swallow. Avoid breathing gas. Handle and open container with care. When using do not eat, drink or smoke. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only outdoors or in a well-ventilated area.
- Hygiene measures : Wash contaminated clothing before reuse. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Proper grounding procedures to avoid static electricity should be followed.
- Storage conditions : Store in accordance with local regulations. Keep out of the reach of children. Keep container tightly closed. Store in a dry, cool and well-ventilated place. Protect from sunlight. Protect containers from physical damage. Eliminate ignition sources. Firmly secure cylinders upright to keep them from falling or being knocked over.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Natural Gas	
No additional information available	
Natural gas (8006-14-2)	
Canada (Saskatchewan) - Occupational Exposure Limits	
OEL TWA [ppm]	1000 ppm
OEL STEL [ppm]	1250 ppm
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	Simple asphyxiant See Appendix F: Minimal Oxygen Content
Methane (74-82-8)	
Canada (Saskatchewan) - Occupational Exposure Limits	
OEL TWA [ppm]	1000 ppm
OEL STEL [ppm]	1250 ppm
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	Simple asphyxiant See Appendix F: Minimal Oxygen Content

Natural Gas

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

Ethane (74-84-0)	
Canada (Alberta) - Occupational Exposure Limits	
OEL TWA [ppm]	1000 ppm
Canada (Saskatchewan) - Occupational Exposure Limits	
OEL TWA [ppm]	1000 ppm
OEL STEL [ppm]	1250 ppm
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	Simple asphyxiant See Appendix F: Minimal Oxygen Content
Propane (74-98-6)	
Canada (Alberta) - Occupational Exposure Limits	
OEL TWA [ppm]	1000 ppm
Canada (Quebec) - Occupational Exposure Limits	
VEMP (OEL TWA)	1800 mg/m ³
VEMP (OEL TWA) [ppm]	1000 ppm
Canada (Saskatchewan) - Occupational Exposure Limits	
OEL TWA [ppm]	1000 ppm
OEL STEL [ppm]	1250 ppm
USA - ACGIH - Occupational Exposure Limits	
Local name	Propane
Remark (ACGIH)	TLV® Basis: Simple Asphyxiant
ACGIH chemical category	Simple asphyxiant See Appendix F: Minimal Oxygen Content
Regulatory reference	ACGIH 2023
USA - OSHA - Occupational Exposure Limits	
Local name	Propane
OSHA PEL TWA [1]	1800 mg/m ³
OSHA PEL TWA [2]	1000 ppm
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - IDLH - Occupational Exposure Limits	
IDLH [ppm]	2100 ppm (10% LEL)
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	1800 mg/m ³
NIOSH REL TWA [ppm]	1000 ppm
n-Butane (106-97-8)	
Canada (Alberta) - Occupational Exposure Limits	
OEL TWA [ppm]	1000 ppm
Canada (British Columbia) - Occupational Exposure Limits	
OEL STEL [ppm]	1000 ppm (Butane, all isomers)

Natural Gas

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

n-Butane (106-97-8)	
Canada (Ontario) - Occupational Exposure Limits	
OEL STEL [ppm]	1000 ppm (explosion hazard (Butane, all isomers))
Canada (Quebec) - Occupational Exposure Limits	
VEMP (OEL TWA)	1900 mg/m ³
VEMP (OEL TWA) [ppm]	800 ppm
Canada (Saskatchewan) - Occupational Exposure Limits	
OEL TWA [ppm]	1000 ppm (Butane, all isomers)
OEL STEL [ppm]	1250 ppm (Butane, all isomers)
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL STEL [ppm]	1000 ppm (explosion hazard (Butane, isomers))
USA - IDLH - Occupational Exposure Limits	
IDLH [ppm]	1600 ppm (>10% LEL)
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	1900 mg/m ³
NIOSH REL TWA [ppm]	800 ppm
Nitrogen (7727-37-9)	
Canada (Alberta) - Occupational Exposure Limits	
Local name	Nitrogen
Notations and remarks	Substance is a simple asphyxiant that may create an atmosphere deficient in oxygen; available oxygen in the range of 19.5 percent to 23 percent by volume must be present.
Regulatory reference	Alberta Regulation 191/2021
Canada (British Columbia) - Occupational Exposure Limits	
Local name	Nitrogen
Notations and remarks	Simple asphyxiant
Regulatory reference	OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC)
USA - ACGIH - Occupational Exposure Limits	
Local name	Nitrogen
Remark (ACGIH)	TLV® Basis: Simple Asphyxiant
ACGIH chemical category	Simple asphyxiant See Appendix F: Minimal Oxygen Content
Regulatory reference	ACGIH 2023
Carbon dioxide (124-38-9)	
Canada (Alberta) - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA	9000 mg/m ³
OEL TWA [ppm]	5000 ppm
OEL STEL	54000 mg/m ³
OEL STEL [ppm]	30000 ppm

Natural Gas

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

Carbon dioxide (124-38-9)	
Regulatory reference	Alberta Regulation 191/2021
Canada (British Columbia) - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	15000 ppm
Regulatory reference	OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC)
Canada (Ontario) - Occupational Exposure Limits	
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	30000 ppm
Canada (Quebec) - Occupational Exposure Limits	
VECD (OEL STEL)	54000 mg/m ³
VECD (OEL STEL) [ppm]	30000 ppm
VEMP (OEL TWA)	9000 mg/m ³
VEMP (OEL TWA) [ppm]	5000 ppm
Canada (Saskatchewan) - Occupational Exposure Limits	
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	30000 ppm
USA - ACGIH - Occupational Exposure Limits	
Local name	Carbon dioxide
ACGIH OEL TWA [ppm]	5000 ppm
ACGIH OEL STEL [ppm]	30000 ppm
Remark (ACGIH)	TLV® Basis: Asphyxia
Regulatory reference	ACGIH 2022
USA - OSHA - Occupational Exposure Limits	
Local name	Carbon dioxide
OSHA PEL TWA [1]	9000 mg/m ³
OSHA PEL TWA [2]	5000 ppm
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - IDLH - Occupational Exposure Limits	
IDLH [ppm]	40000 ppm
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	9000 mg/m ³
NIOSH REL TWA [ppm]	5000 ppm
NIOSH REL STEL	54000 mg/m ³
NIOSH REL STEL [ppm]	30000 ppm

Natural Gas

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

n-Pentane (109-66-0)	
Canada (Alberta) - Occupational Exposure Limits	
OEL TWA	1770 mg/m ³
OEL TWA [ppm]	600 ppm
Canada (British Columbia) - Occupational Exposure Limits	
OEL TWA [ppm]	1000 ppm (Pentane, all isomers)
Canada (Ontario) - Occupational Exposure Limits	
OEL TWA [ppm]	1000 ppm
Canada (Quebec) - Occupational Exposure Limits	
VEMP (OEL TWA) [ppm]	1000 ppm (Pentane (all isomers))
Canada (Saskatchewan) - Occupational Exposure Limits	
OEL TWA [ppm]	600 ppm
OEL STEL [ppm]	750 ppm
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA [ppm]	1000 ppm (Pentane, all isomers)
USA - OSHA - Occupational Exposure Limits	
OSHA PEL TWA [1]	2950 mg/m ³
OSHA PEL TWA [2]	1000 ppm
USA - IDLH - Occupational Exposure Limits	
IDLH [ppm]	1500 ppm (10% LEL)
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	350 mg/m ³
NIOSH REL TWA [ppm]	120 ppm
NIOSH REL C	1800 mg/m ³
NIOSH REL C [ppm]	610 ppm

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.
Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:
Wear suitable gloves. Consult glove manufacturer's product information on material suitability and material thickness.
Eye protection:
Safety glasses or goggles are recommended when using product.
Skin and body protection:
Wear suitable protective clothing
Respiratory protection:

Natural Gas

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According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

In case of insufficient ventilation, wear suitable respiratory equipment. 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. SDSs cannot provide detailed and complete respiratory protection guidelines. Selection of respiratory protection must be done by a qualified person who has assessed the work environment.

Other information:

Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Colour	: Colourless
Odour	: Odourless "Rotten Egg" smell (Mercaptan mixture added as odorant).
Odour threshold	: < 10000 ppm
pH	: No data available
Melting point	: -182.6 °C (-296.7°F)
Freezing point	: No data available
Boiling point	: -161.5 °C (-258.7°F)
Flash point	: > -188 °C (-370°F) (methane)
Relative evaporation rate (butylacetate=1)	: > 1
Flammability	: Extremely flammable gas.
Vapour pressure	: 133.3 kPa (>1000 mm Hg (20°C/68°F)
Relative vapour density at 20°C / 68 °F	: 0.56 – 0.59
Relative density	: No data available
Solubility	: No data available
Partition coefficient n-octanol/water	: No data available
Auto-ignition temperature	: 537 °C (998.6°F)
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive limits	: Lower explosion limit: 5 vol % Upper explosion limit: 15 vol %
Explosive properties	: No data available
Oxidising properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known under normal conditions of use.

10.2. Chemical stability

Stable under normal conditions. Extremely flammable gas. Contains gas under pressure; may explode if heated.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Heat. Incompatible materials. Sources of ignition. Direct sunlight.

Natural Gas

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

10.5. Incompatible materials

Oxidizing materials.

10.6. Hazardous decomposition products

May include, and are not limited to: oxides of carbon.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified.
Acute toxicity (dermal) : Not classified.
Acute toxicity (inhalation) : Not classified.

Natural gas (8006-14-2)	
LC50 inhalation rat	658 mg/l/4h
ATE CA (vapours)	658 mg/l/4h
ATE CA (dust,mist)	658 mg/l/4h

Methane (74-82-8)	
LD50 dermal rat	> 2000 mg/kg
LC50 inhalation rat	539600 ppm (Exposure time: 2 h)
ATE CA (Gases)	539600 ppmv/4h

Ethane (74-84-0)	
LC50 inhalation rat	> 800000 ppm/4h

Propane (74-98-6)	
LC50 inhalation rat	> 800000 ppm (Exposure time: 15 min)

n-Butane (106-97-8)	
LC50 inhalation rat	658 g/m ³ (Exposure time: 4 h)
ATE CA (vapours)	658 mg/l/4h
ATE CA (dust,mist)	658 mg/l/4h

n-Pentane (109-66-0)	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rabbit	3000 mg/kg
LC50 inhalation rat	364 g/m ³ (Exposure time: 4 h)
ATE CA (Dermal)	3000 mg/kg bodyweight
ATE CA (vapours)	364 mg/l/4h
ATE CA (dust,mist)	364 mg/l/4h

Skin corrosion/irritation : Not classified.
Serious eye damage/irritation : Not classified.
Respiratory or skin sensitisation : Not classified.
Germ cell mutagenicity : Not classified.
Carcinogenicity : Not classified.
Reproductive toxicity : Not classified.

Natural Gas

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

n-Pentane (109-66-0)	
NOAEL (animal/male, F0/P)	300 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 415 (One-Generation Reproduction Toxicity Study)
NOAEL (animal/female, F0/P)	≥ 1000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 415 (One-Generation Reproduction Toxicity Study)

STOT-single exposure : Not classified.

n-Pentane (109-66-0)	
STOT-single exposure	May cause drowsiness or dizziness.

: Not classified.

STOT-repeated exposure

Methane (74-82-8)	
LOAEC (inhalation, rat, gas, 90 days)	12000 ppm Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test), Guideline: other:

n-Pentane (109-66-0)	
NOAEC (inhalation, rat, vapour, 90 days)	30 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study), Guideline: other:U.S. EPA/FIFRA Guidelines §82-4, Guideline: EPA OTS 798.2450 (90-Day Inhalation Toxicity), Guideline: other:U.S. EPA/TSCA Guidelines 40 CFR §798.6059, and §798.6059, 798.6200, 798.6400, Guideline: other:EU Guideline 87/302/EEC

Aspiration hazard : Not classified.

Symptoms/effects after inhalation : May cause irritation to the respiratory tract. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Symptoms of oxygen deficiency include respiratory difficulty, headache, dizziness, nausea, unconsciousness or death.

Symptoms/effects after skin contact : May cause skin irritation. Repeated exposure may cause skin dryness or cracking.

Symptoms/effects after eye contact : May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.

Symptoms/effects after ingestion : May be harmful if swallowed. May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Other information : Likely routes of exposure: ingestion, inhalation, skin and eye.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : May cause long-term adverse effects in the aquatic environment.

n-Pentane (109-66-0)	
LC50 - Fish [1]	9.87 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 - Crustacea [1]	9.74 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 - Fish [2]	11.59 mg/l (Exposure time: 96 h - Species: Pimephales promelas)

12.2. Persistence and degradability

Natural Gas	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Natural Gas	
Bioaccumulative potential	Not established.

Natural Gas

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

Natural gas (8006-14-2)	
Partition coefficient n-octanol/water	≤ 2.8
Methane (74-82-8)	
Partition coefficient n-octanol/water	1.09
Ethane (74-84-0)	
Partition coefficient n-octanol/water	1.09 – 2.8 (at 20 °C (at pH 7)
Propane (74-98-6)	
Partition coefficient n-octanol/water	1.09 (at 20 °C (at pH 7)
n-Butane (106-97-8)	
Partition coefficient n-octanol/water	2.31 (at 20 °C (at pH 7)
Carbon dioxide (124-38-9)	
BCF - Fish [1]	(no bioaccumulation)
n-Pentane (109-66-0)	
Partition coefficient n-octanol/water	3.45 (at 25 °C (at pH 7)

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on global warming : No known effects from this product.
Other information : No other effects known.

SECTION 13: Disposal considerations

13.1. Disposal methods

Product/Packaging disposal recommendations : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. Recycle empty containers where allowed.
Additional information : Handle empty containers with care because residual vapours are flammable.

SECTION 14: Transport information

In accordance with DOT / TDG

14.1. UN number

DOT NA No : UN1971
UN-No. (TDG) : UN1971

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Methane, compressed (OR Natural gas, compressed (Methane, Natural gas))
Proper Shipping Name (TDG) : METHANE, COMPRESSED (OR Natural gas, compressed (Methane, Natural gas))

14.3. Transport hazard class(es)

DOT
Transport hazard class(es) (DOT) : 2.1
Hazard labels (DOT) : 2.1

Natural Gas

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015



TDG

Transport hazard class(es) (TDG) : 2.1

Hazard labels (TDG) : 2.1



14.4. Packing group

Packing group (DOT) : Not applicable

Packing group (TDG) : Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

Special transport precautions : Do not handle until all safety precautions have been read and understood.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1 Federal regulations

All components of this product are listed on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

All components of this product are listed on the Canadian DSL (Domestic Substances List) and NDSL (Non-Domestic Substances List) inventories.

15.2. International regulations

No additional information available

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

Revision date : 08/15/2023

Other information : None.

Prepared by : Nexreg Compliance Inc.

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Natural Gas

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According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

Full text of H-statements	
Flam. Gas 1	Flammable gases, Category 1
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Simple Asphy	Simple Asphyxiant

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Exhibit C – Federal & State Permits Authorizing Project YaREN and Related Projects

Section C.1 Project YaREN Permits, Approvals, and Consultations

- **Texas Commission on Environmental Quality (“TCEQ”) Air Permitting**

- Project YaREN requires an Air Quality New Source Review (“NSR”) and Prevention of Significant Deterioration (“PSD”) permit. This air permit is issued under the authority of the federal Clean Air Act, in accordance with a program administered in the State of Texas by TCEQ. Through this air permit, ICAP will be required by law to meet air emissions limits reflecting use of the best available control technology and to demonstrate that these limits are protective of the safety and well-being of area residents and the environment.
- ICAP submitted its air permit application to TCEQ on October 12, 2023. TCEQ determined that the application was administratively complete, and on November 10, 2023, ICAP published a first public notice announcing a 30-day comment period. When the TCEQ Executive Director announced that TCEQ staff had completed its technical review and recommended issuance of the working draft permit, ICAP published a second public notice on August 30, 2024 announcing a second 30-day comment period. TCEQ also held a public meeting on the air permit on September 5, 2024, at a community center in Portland (selected because it could accommodate the expected number of attendees).
- As part of the air permit application, review, and approval process, ICAP has completed the following steps, and will implement the represented equipment, to demonstrate that Project YaREN’s air emissions from routine operations and maintenance/startup/shutdown activities will be protective of human health and the environment:
 - Conduct air emissions dispersion studies using EPA-required models to evaluate maximum predicted off-site impacts to human health and the environment. These modeling results then were compared to federal and state standards and species-specific health-based guidelines to illustrate that the project will not result in adverse environmental or health effects.
 - Identify, propose, install, and operate best available control technology (BACT) to minimize air emissions from the facility. BACT includes emissions capture and control equipment as well as work practices.
 - Identify, propose, install, and operate emissions source monitoring methods acceptable to EPA and TCEQ to provide source-specific air permit limit compliance demonstrations.
- ICAP’s application and TCEQ’s proposed decision on the air permit will be subject to a contested case process at the State Office of Administrative Hearings, the presiding administrative law judge’s proposal for decision that emerges from that hearing, and an ultimate decision by the three appointed TCEQ commissioners. TCEQ’s final decision is also subject to judicial review.
- Project YaREN will also require a TCEQ-issued Title V Operating Permit, which ICAP would apply for prior to the start of operations. This permit will ensure that all of the emission sources at the facility comply with air quality regulations for protection of human health and the environment. The Title V permit incorporates the emission limits and monitoring, reporting, and recordkeeping requirements approved in the NSR/PSD permit, assembles these permit requirements with other applicable state and federal air quality requirements into a single comprehensive document, and mandates semi-annual compliance evaluation and reporting. That Title V permit application also will be subject to public input, including a public comment process and EPA oversight.

- **TCEQ Water Use Permit**

- Project YaREN requires this permit to divert state water from Corpus Christi Bay for use at the facility. ICAP

proposes to use seawater for the manufacturing operation's recirculating cooling and heating systems, with approximately 75% of the seawater being returned to the bay. This use of seawater will allow Project YaREN to avoid drawing from limited freshwater sources to supply process water for facility operations.

- ICAP submitted its application for a TCEQ water use permit on November 13, 2024, and TCEQ determined that application was administratively complete on January 15, 2025. TCEQ is conducting its technical review of the application, which includes evaluating potential impacts to state water availability, conservation, and environmental quality. Following technical review, TCEQ will notify other water rights holders and navigation districts within the water basin regarding its proposed decision, and ICAP will publish a similar notification to the general public. This will open a 30-day public comment period, and TCEQ will likely hold a public hearing to take additional public comment.
- As with the air permit, ICAP's application and TCEQ's proposed decision on the water use permit will be subject to a contested case hearing, with the ultimate decision being made by the three TCEQ commissioners. TCEQ's final decision is also subject to judicial review.

- **TCEQ Water Discharge Permitting**

- Project YaREN requires permits to discharge industrial wastewater, to discharge construction stormwater, and to discharge stormwater during operations. These water discharge permits are issued under Section 402 of the federal Clean Water Act, and TCEQ is authorized to issue these permits as part of the Texas Pollutant Discharge Elimination System ("TPDES") program, which it manages to protect state water quality.
- ICAP submitted an application for a TCEQ industrial wastewater discharge permit, which TCEQ received on December 27, 2024. TCEQ determined the application administratively complete on January 28, 2025. ICAP published notice of its application on February 14, 2025, which commenced a 30-day public comment period. TCEQ is proceeding with its technical review. That review includes analysis of ICAP's proposed discharge of water used as boiler feed water and cooling water, as well as ICAP's modeling results showing that the proposed discharge meets the regulatory standards for temperature and salinity. Once that review is completed, TCEQ will prepare a draft permit and preliminary decision. ICAP will publish notice of TCEQ's preliminary decision, which will open a second public comment period. TCEQ will likely hold a public hearing to take additional public comment at or near the close of the public comment period.
- ICAP's application and TCEQ's proposed decision on the industrial wastewater discharge permit will be subject to a contested case hearing, with the ultimate decision being made by the three TCEQ commissioners. TCEQ's final decision is also subject to judicial review.
- Project YaREN will also require TPDES permits regulating the discharge of stormwater during construction and operation. ICAP's construction and operation activities will likely qualify for TCEQ general TPDES permits for stormwater discharges.

- **U.S. Army Corps of Engineers ("Army Corps") Permitting and Related Agency Approvals and Consultations**

- Project YaREN's facility design requires water intake and discharge pipes placed beneath existing docks in the water of Corpus Christi Bay. The Army Corps has jurisdiction under Section 404 of the Clean Water Act for the discharge of dredged or fill material into all waters of the United States, and jurisdiction under Section 10 of the Rivers and Harbors Act for the construction of any structure in navigable waters. ICAP anticipates obtaining an individual Section 404/10 permit from the Army Corps, which would be required before ICAP could begin any in-water work. ICAP anticipates applying for the permit after the specific design for the intake/discharge structures is available.
- The Army Corps review will consider Project YaREN's impacts on aquatic resources, on the public interest,

and on the human environment in accordance with the requirements of the Clean Water Act and the National Environmental Policy Act.

- In addition, before the Army Corps can issue the Section 404/10 permit, TCEQ must issue (or waive) water quality certification under Section 401 of the Clean Water Act. As part of that review, TCEQ will consider whether the permitted activities will comply with applicable water quality requirements and standards. This process typically culminates in TCEQ identifying what additional enforceable conditions the Army Corps must include in any permit issued for the project. Similarly, the Army Corps must obtain a determination from the State (here, issued by the Texas General Land Office) under the Coastal Zone Management Act that the permitted activities are consistent with the State's coastal management policies, which include protecting coastal resources, promoting sustainable development, and enhancing the resilience of coastal communities to natural hazards.
- In processing ICAP's permit application, the Army Corps will also consult with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to address any impacts to protected species and habitat. This will include consultations under Section 7 of the Endangered Species Act and, as applicable, under other natural resource protection statutes such as the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and the Magnuson-Stevens Fishery Conservation and Management Act. This process also includes consultation with the Texas Parks and Wildlife Department over potential impacts to state-protected species.
- The Army Corps will also consult with the Texas Historical Commission under Section 106 of the National Historic Preservation Act, to consider potential impacts on cultural resources.
- **U.S. Coast Guard Review**
 - Under the Ports and Waterway Safety Act, the Coast Guard will review the suitability of the waterway near the Project YaREN facility for the safe transport of ammonia on vessels. ICAP will prepare an assessment analyzing the waterway's suitability. The Coast Guard will then determine whether to issue a letter recommending the suitability of the waterway for the proposed marine traffic. The Coast Guard provides public notice of its review in the Federal Register and typically allows 30 days for public comments on vessel safety issues. This process must be complete before ammonia transfer operations commence.

Section C.2 CO₂ Pipeline Permits, Approvals, and Consultations

The list of required permits and approvals for the third-party CO₂ pipeline ultimately depends on the pipeline's final routing. The items listed below are those most commonly required for this type of pipeline project.

- **Army Corps Permitting and Related Agency Approvals and Consultations.** The CO₂ pipeline's crossings of streams and wetlands subject to Army Corps jurisdiction under Section 404 of the Clean Water Act, and crossings of navigable waterbodies subject to Army Corps jurisdiction under Section 10 of the Rivers and Harbors Act, would require Army Corps authorization. If the CO₂ pipeline required an individual permit, the Army Corps would complete reviews and consultations similar to those described for ICAP's Section 404/10 permit. If it qualified for a nationwide or other general permit, the Army Corps would still need to ensure that most of those requirements were met, such as the Clean Water Act Section 401 water quality certification, Coastal Zone Management Act consistency determination, Endangered Species Act Section 7 consultation, and National Historic Preservation Act Section 106 consultation.
- **TCEQ Air and Water Discharge Permitting.** The CO₂ pipeline would require TCEQ air permits issued under the Clean Air Act for any emissions sources (e.g., compressor units) and TPDES water discharge permits (e.g., general permits for the discharge of hydrostatic test water; construction stormwater).
- **Texas Railroad Commission Reports and Permits.** The third-party CO₂ pipeline operator would need to file

a P-5 Organization Report (which registers the entity with the Texas Railroad Commission), a T-4 Pipeline Operator Permit (which requires operators to show they have implemented safety measures and environmental protections consistent with state and federal regulations), and a PS-48 Pipeline New Construction Notice and Report (which provides information the agency needs to monitor pipeline construction activities).

- **Other Permits.** Depending on routing, the CO₂ pipeline may require a Texas Antiquities Permit from the Texas Historical Commission (needed to manage ground disturbances on public land and the work affecting state-owned historic buildings to protect historical resources) or a Texas Parks and Wildlife Department sand and gravel permit (needed for activities requiring excavation of sand and gravel in state waters).

Section C.3 Natural Gas Supply Pipeline Permits, Approvals, and Consultations

Project YaREN's ammonia production facility will require a natural gas supply pipeline, which would be constructed and operated by a third party. Project YaREN's siting at the EIEC means that it is in close proximity to several natural gas supply pipelines, and any lateral constructed to provide the needed natural gas supply is likely to be relatively short. As with the CO₂ pipeline, the list of required permits and approvals for the third-party natural gas supply pipeline ultimately depends on the pipeline's final routing, and the below list captures those most commonly required for this type of pipeline project.

- **Federal Energy Regulatory Commission ("FERC") Approval.** Assuming the supply lateral would be a natural gas supply pipeline in interstate service, the third-party pipeline operator would need to obtain a Natural Gas Act Section 7 certificate of public convenience and necessity. FERC would review the project under the Natural Gas Act to determine whether it is in the public interest, and FERC would act as the lead federal agency for the project's National Environmental Policy Act review of impacts from the project's construction and operation. FERC would also act as the lead federal agency for the same suite of required consultations discussed above for Project YaREN's Army Corps permitting, including Endangered Species Act Section 7 and National Historic Preservation Act Section 106 consultations, and FERC would need to obtain Clean Water Act Section 401 water quality certification and Coastal Zone Management Act consistency determination for the project.
- **Army Corps Permitting.** The natural gas supply pipeline's crossings of streams and wetlands subject to Army Corps jurisdiction would require Army Corps authorization, as discussed above for the CO₂ pipeline. However, to the extent reviews or consultations are required under the National Environmental Policy Act, the Endangered Species Act, the National Historic Preservation Act, and similar statutes, FERC would be the lead agency, with the Army Corps likely acting as a cooperating agency.
- **TCEQ Air and TCEQ or Railroad Commission Water Discharge Permitting.** The natural gas supply pipeline would require TCEQ air permits issued under the Clean Air Act for any emissions sources (e.g., compressor units). Depending on facility type and the applicability of exemptions under the Clean Water Act, it may require TCEQ- or Railroad Commission-issued water discharge permits (e.g., general permits for the discharge of hydrostatic test water; construction stormwater).
- **Other Permits.** Depending on routing, the natural gas supply pipeline may require a Texas Antiquities Permit from the Texas Historical Commission (needed to manage ground disturbances on public land and the work affecting state-owned historic buildings to protect historical resources) or a Texas Parks and Wildlife Department sand and gravel permit (needed for activities requiring excavation of sand and gravel in state waters).