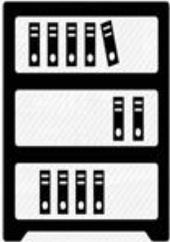


Risk Before and After Data: Visualized by Risk Alive

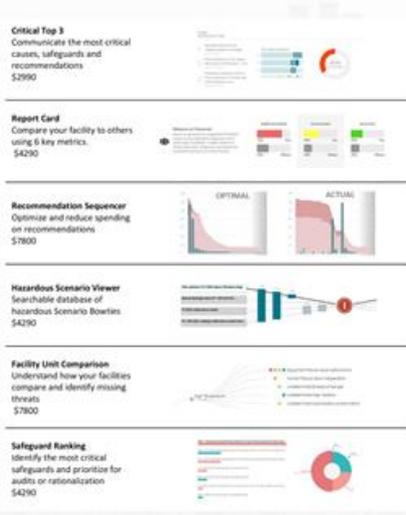
Risk, Before and After Data



**Risk Data is the MOST
 UNDER-VALUED
 ASSET AVAILABLE**







Critical Top 3
 Communicate the most critical causes, safeguards and recommendations
 \$2990

Report Card
 Compare your facility to others using 9 key metrics.
 \$4290

Recommendation Sequencer
 Optimize and reduce spending on recommendations
 \$7800

Hazardous Scenario Viewer
 Searchable database of hazardous Scenario Bowties
 \$4290

Facility Unit Comparison
 Understand how your facilities compare and identify missing threats
 \$7800

Safeguard Ranking
 Identify the most critical safeguards and prioritize for audits or rationalization
 \$4290

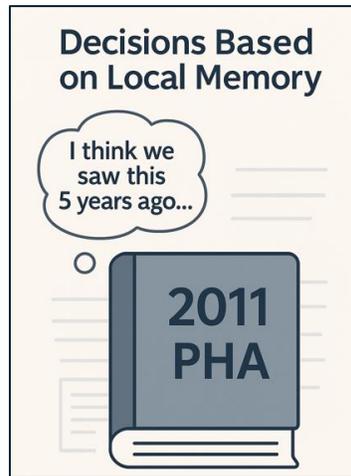
Before vs. After Risk Data Intelligence

Decisions based on local memory	Decisions guided by aggregated intelligence
Reactive after incidents	Proactive risk prevention
Risk data locked in reports	Real-time access to risk data
Siloed assessments	Shared learnings across sites
Low visibility of peer insights	Thousand voices in every room

Are you ready to see the difference?
 → Book a Demo → Host a Workshop → Invite a Guest Speaker
 Visit: www.riskalive.com

Decisions based on local memory → Decisions guided by aggregated intelligence:

With Risk alive, you can leverage industry PHA's through industry aggregated vulnerability assessments in the form of bowtie visuals for high-risk assessments to add full comprehensiveness to your PHA's. Many different unit types are published and currently available. Alternatively, request a specific unit type. We will get it done for you.



The screenshot displays the "PHA Analytics Dashboard" for a "Sample Company". The dashboard is divided into several sections:

- Unit Comparisons:** Includes "Amine Unit Comparison" (Internal Facilities (2)) and "Steam Generation Unit Comparison" (Internal Facilities (1)).
- Latest Reports:** A list of reports with dates, including "Plant 45 - Amine Recovery Unit HAZOP" (May 05 2025), "Plant 2 Unit 200 Hydrocracker HAZOP" (Apr 17 2025), "Plant 1 Unit 30 HF Alkylation HAZOP" (Apr 16 2025), "Gas Plant Asset #3" (Jan 31 2025), "Gas Plant Asset #1" (Nov 04 2024), "Plant 2 Unit 300 Naphtha Hydrotreating HAZOP" (Jun 05 2024), "Plant 1 Unit 40 Diesel Hydrotreating HAZOP" (Jul 26 2023), "HAZOP Template for Workshop" (Jul 08 2023), "Plan & Assist - FCC Industry Dataset" (Jul 08 2023), and "Plant 4 - H2A - 100 Maximum Plant Reliance U.S. 2008" (Jul 08 2023).
- Unit Types:** A list of unit types with counts, including "Gas Plant" (3), "Amine Sweetening and Recovery" (2), "Hydrofluoric Alkylation" (2), "Froth Treatment" (1), "Gas Compression" (1), "Fluid Catalytic Cracker (FCCU)" (1), and "Vacuum Distillation" (1).
- Reports:** A section for filtering reports, currently showing "FCC Industry" and "Fluid Catalytic Cracker (FCCU)" (HAZOP) with a "View Report" button.

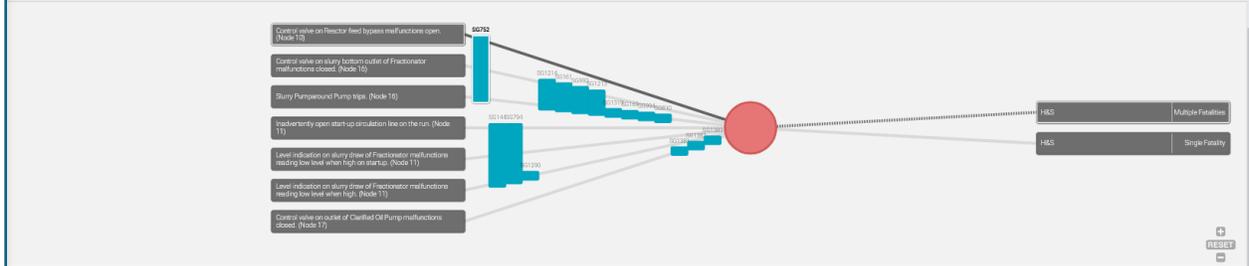
The footer includes the "RISK ALIVE" logo, "Privacy Policy" and "Terms of Use" links, and the copyright notice "© 2025 Risk Alive Analytics Inc."

Plan & Assist - FCC Industry Dataset Risk Alive Report

Your report is based on



Fractionator - High Level - Loss of Containment

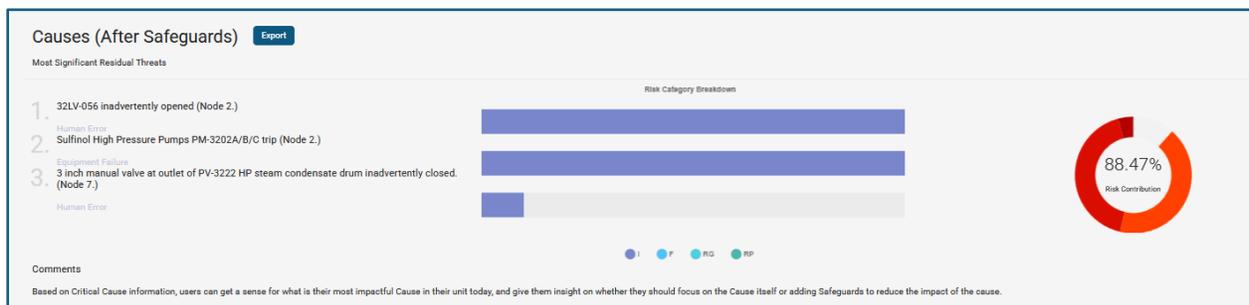


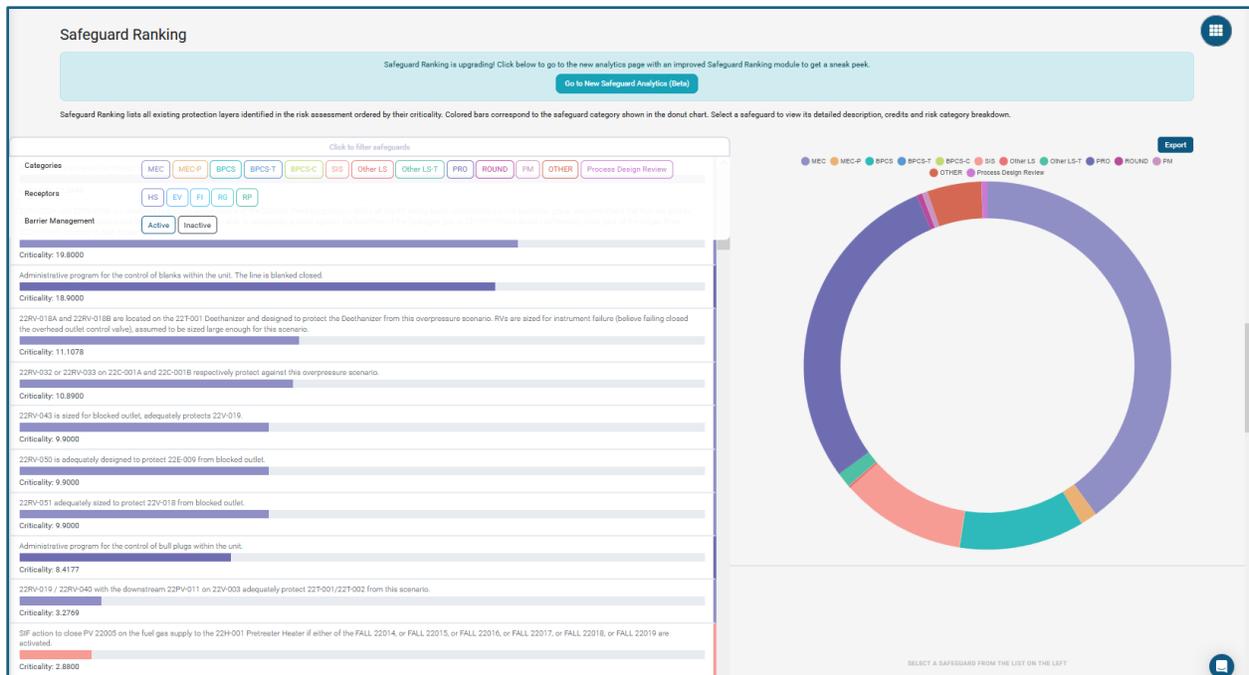
CAUSES SAFEGUARDS RECOMMENDATIONS CONSEQUENCES

ID	Type	Description	Max Credits	Search Related	View Scenario
S6732	Preventative	BPCS: High level alarm on Fractionator Bottoms with operator intervention.	1		VIEW SCENARIO(3)
S0144	Preventative	BPCS: High level alarm on Fractionator with operator action.	1		VIEW SCENARIO(3)
S0794	Preventative	BPCS: High pressure alarm on Fractionator with operator action.	1		VIEW SCENARIO(3)
S01290	Preventative	SI: Interlock to feed to Fractionator on high Reactor pressure.	1		VIEW SCENARIO(3)
S01214	Preventative	BPCS: HGO to storage line plugging alarm.	1		VIEW SCENARIO(3)
S0161	Preventative	BPCS: High level alarm on the Fractionator with operator intervention to lower the Fractionator level or cut feed.	1		VIEW SCENARIO(3)
S0593	Preventative	PRO: Spare Slurry Pumperound Pump, manual start locally.	1		VIEW SCENARIO(3)

Reactive after incidents → Proactive risk prevention:

Benefit tremendously from the Risk Alive platform to provide proactive risk prevention on a variety of KPI's with either data already available from your PHA or gap assessments through industry comparison. From human dependent threats and equipment threats and providing safety training and awareness for operations, to most critical safeguard assessments and optimizing cost, preventative maintenance and sparing, all while focusing on what really matters.





- Determine preventative maintenance plans for your most critical safeguards, i.e. mechanical relief devices, controls, etc.
- Assess your most critical human-based safeguards such as alarms, procedures and rounds.
- Much more.

Risk Data Locked in Reports → Real-time access to data:

Risk Alive's LivePHA™ is prebuilt for dynamic and continuous real-time access and assessment. Different user permissions can be granted and historical changes tracked with timestamps. Know who updated what and when. With the analytics platform integrated, visualize real time changes in risk data and hazard assessments as they impact your overall unit, site, and enterprise. Risk assessments can be fully integrated into your PSM program with rich dynamic data available at your team's fingertips.



A screenshot of the LivePHA software interface. The top navigation bar shows 'LIVEPHA™ PROJECTS / PLANT 2 UNIT: 300 NAPHTHA HYDROTREATER HAZOP'. The main area is titled 'Worksheet' and displays a process flow diagram for '22V-006 Compressor Suction K.O. Drum and Reformer Make-up Gas to the inlet of the 22C-001 A/B Compressors'. The interface includes a left sidebar with navigation icons, a central content area with a 'Cause 1' section detailing a 'Failure of the LC 22002 on the 22V-006 Compressor Suction K.O. Drum (T)', and a right sidebar with 'Safeguard' details. The 'Safeguard 1' section lists '23LAH-025 on 23V-004, upstream of 22V-006 with operator action.' and 'BPCS 1.000 P'. Other safeguards include '22LAH-023 on 22V-006 with operator action', '22LCH-024 on 22V-006 SIS trip of 22C-001A/B', and '22C-001A/B vibration alarms & trips on SIS system, SIL-1'. The bottom of the interface shows risk rankings: 'Inherent Risk Ranking 5 L4', 'Residual Risk Ranking 5 L1 N', and 'Future Risk Ranking'. A 'Validations' panel on the right indicates 'All validation rules have passed'.

LIVEPHA™ PROJECTS / PLANT 2 UNIT 300 NAPHTHA HYDROTREATER HAZOP

Executive Summary Data Mining

Summary of key findings from the PHA study
 The PHA analyzed 362 hazardous scenarios. Table 1 provides risk ranking details of these scenarios before safeguard(s), after safeguard(s), and after recommendation(s) are considered.

Name	Inherent Risk Ranking	Residual Risk Ranking	Future Risk Ranking
I	19	0	0
I+	0	0	0
II	80	0	0
III	211	294	20
IV	52	67	3

Action Items
 The total number of action items proposed during the PHA was 16, which are summarized below.

16
Total Action Items

16
Recommendation Items

I Risk Ranking	0
I+ Risk Ranking	0
II Risk Ranking	0
III Risk Ranking	16
IV Risk Ranking	0
No Risk Ranking	0

*Based on the associated Highest Residual Risk Ranking

P 0
Parking Lot Items

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LIVEPHA™ PROJECTS / PLANT 2 UNIT 300 NAPHTHA HYDROTREATER HAZOP

History View All Details

This page may not show your latest changes. The history page can take up to 15 minutes to update fully.

- Submission Succeeded**
 The data has been submitted to RiskAlive. Your analytics have been updated with your data.

[Export](#)

On Sunday, June 29, 2025 12:27 PM
 User 1
- 6 Data Changes**
 6 edited items.

[View Details](#)

From Sunday, June 29, 2025 12:26 PM
 To Sunday, June 29, 2025 12:26 PM
 User 1
- Import Succeeded**
 New data has been imported. The previous data has been replaced.

[Download Imported File](#)

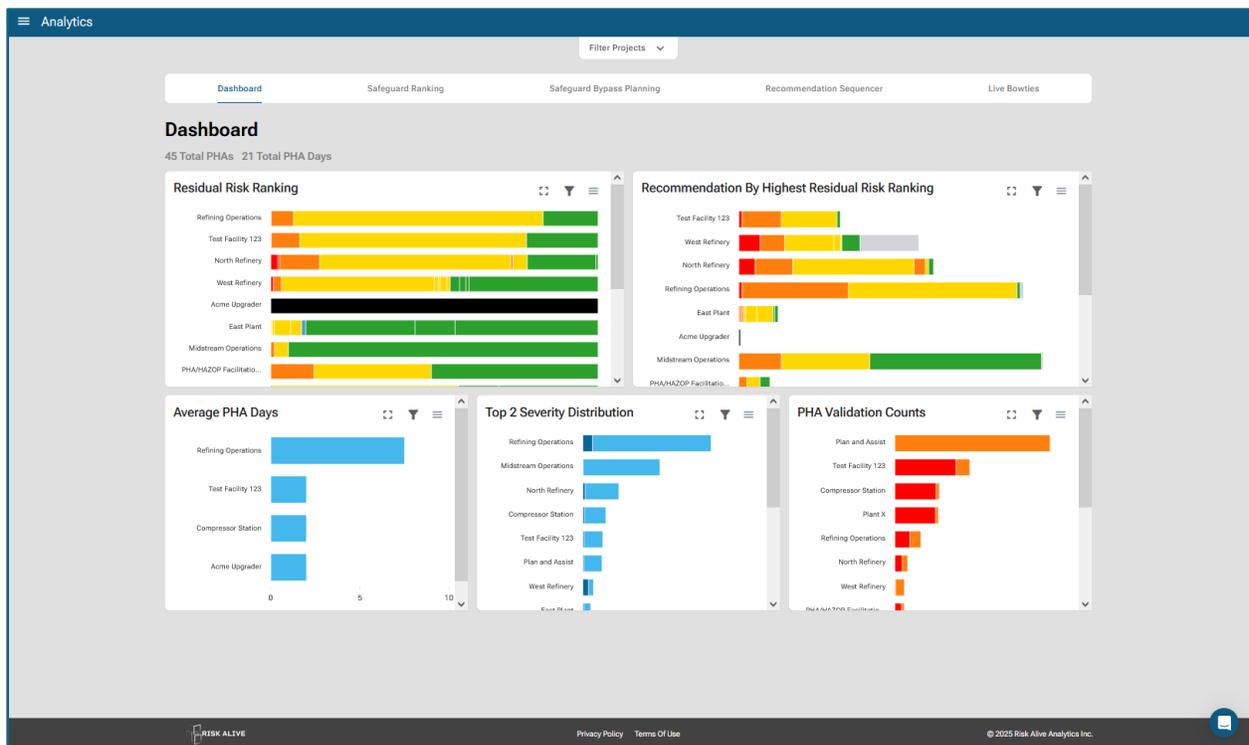
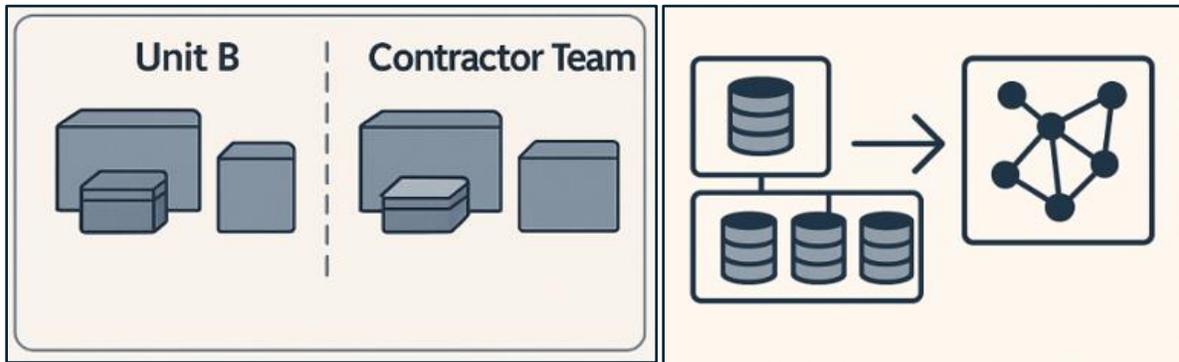
On Thursday, April 17, 2025 7:49 AM
 User 2
- 19030 Data Changes**
 + 4687 added items. 9656 edited items. 4687 deleted items.

[View Details](#)

From Thursday, April 17, 2025 7:48 AM
 To Thursday, April 17, 2025 7:49 AM
 User 2

Siloed Assessments → Shared Learnings across sites:

Analytics, data and learnings can be shared across an entire enterprise and assessed for individual processing areas. Multi-unit to site wide, as well as company-wide data is available for action, safety excellence and capital savings.



PHA Analytics Dashboard

Unit Comparisons

Search...

- Amine Unit Comparison Internal Facilities (2)
- Steam Generation Unit Comparison Internal Facilities (1)

Latest Reports

Plant 45 - Amine Recovery Unit HAZOP	May 05 2023
Plant 2 Unit 200 Hydrocracker HAZOP	Apr 17 2023
Plant 1 Unit 30 HF Alkylation HAZOP	Apr 16 2023
Gas Plant Asset #3	Jan 31 2023
Gas Plant Asset #1	Nov 04 2024
Plant 2 Unit 300 Naphtha Hydrotreating HAZOP	Jun 05 2024
Plant 1 Unit 40 Diesel Hydrotreating HAZOP	Jul 26 2023
HAZOP Template for Workshop	Jul 08 2023
Plan & Assesit - FCC Industry Dataset	Jul 08 2023

Unit Types

Search...

- Gas Plant 3
- Amine Sweetening and Recovery 2
- Hydrofluoric Alkylation
- Froth Treatment
- Gas Compression
- Fluid Catalytic Cracker (FCCU)
- Vacuum Distillation

Selected Reports (3)

The following projects will be included in multiple PHA analysis when "Safeguard Ranking" or "Recommendation Sequence" are clicked. Analytics will open in a new tab.

- Gas Plant Asset #1
- Gas Plant Asset #2
- Gas Plant Asset #3

[New Safeguard Ranking \(Beta\)](#)
[Safeguard Ranking](#)
[Recommendation Sequencer](#)
[Analytics Data View](#)
[Archive](#)

Reports

Archived Search...

Unit Name	Unit Types	Date	Report Type	View Report
East Plant				
Unit 01 - Bitumen Treating HAZOP	Froth Treatment	Sep 11 2019	HAZOP	View Report
Midstream Operations				
Gas Plant Asset #1	Gas Plant	Jun 10 2020	HAZOP	View Report
Gas Plant Asset #2	Gas Plant	Sep 19 2019	HAZOP	View Report
Gas Plant Asset #3	Gas Plant	Feb 25 2020	HAZOP	View Report
Unit 04 - Compressor Station HAZOP	Gas Compression	Jan 30 2020	HAZOP	View Report
North Refinery				
Plant 25 - Amine Recovery Unit HAZOP	Amine Sweetening and Recovery	Jun 12 2018	HAZOP	View Report
Unit 491 - HF Alkylation HAZOP+LOPA	Hydrofluoric Alkylation	Apr 24 2018	HAZOP	View Report

Multiple Unit Safeguard Ranking Report

Your report is based on

Gas Plant Asset #1 Compressor Station Gas Plant Asset #2 Compressor Station Gas Plant Asset #3 Compressor Station

Click to filter safeguards

MEC - PSV#700 set at 1724 kPag, sized for blocked flow, will relieve to V-8300/8400 LPG Storage Bullet.	Criticality: 221.9481
MEC - PSV#700 set at 517 kPag, sized for blocked discharge and relieve to V-8300 LPG Storage Bullet.	Criticality: 191.2580
MEC - PSV#2600 set at 8874 kPag, sized for blocked flow and relieve to flare (typical).	Criticality: 69.7883
OCC - Personnel in the flare area less than 10% of time.	Criticality: 67.4190
MEC - PSV 3050 set at 1034 kPag, sized for PV-3020 failure and relieve to flare.	Criticality: 63.5778
MEC - PSV 3050 on V-3050 Fuel Gas Scrubber set at 1690 kPag, sized for PCV-3050 failure, will relieve to flare.	Criticality: 61.7958
MEC - PSV#2880 set at 9756 kPag, sized for blocked flow and relieve to flare.	Criticality: 57.6548
OCC - Personnel in 2-3000 Refrigeration building less than 10% of time.	Criticality: 50.7600
MEC - PSV#3140 set at 1034 kPag, sized for LV-3011 failure and relieve to flare.	Criticality: 44.8668
MEC - PSV#7210 set at 1034 kPag, sized for blocked flow and relieve to atmosphere.	Criticality: 44.7282

Export

Low visibility of peer insights → Thousand voices in every room

With over 30 years of Global industry PHA assessments, now developed into a proprietary database AI search engine. Leverage expertise from thousands of personnel across the world for PHA assessment data for your specific unit. Know exactly what scenarios others have analyzed and how severe they considered them, as well as safeguarding strategies that have been applied across industry.



The screenshot shows a web application interface for searching project data. At the top, there is a navigation bar with a hamburger menu icon and the word "SEARCH". Below this is a search header with a magnifying glass icon and the word "Search". Underneath the header, there is a sub-header "Industry-wide Search" with a "Preview Feature" link. A descriptive paragraph explains the search tooling. Below the text are two toggle switches: "Use Industry-wide Search" (which is turned on) and "Anonymize Data" (which is turned off). A search input field is located below the toggles. Further down, there are two filter sections: "Unit Types" and "Properties". Each section has a search input field and a list of items with checkboxes. The "Unit Types" list includes: Absorption (18 projects), Acetylene Reactor (9 projects), Acid Gas Compression & Dehydration (13 projects), Acid Gas Injection (14 projects), Acid Loading (1 projects), Acid Plant (2 projects), Acid Tank (2 projects), and ACTL Project (1 projects). The "Properties" list includes: Node, Node Process, Deviation, Cause, Consequence, Safeguard, Recommendation, and Remark. A blue "Search" button is positioned at the bottom center of the filter sections. At the very bottom of the page, there is a footer with the Risk Alive logo, links for "Privacy Policy" and "Terms of Use", and a copyright notice "© 2025 Risk Alive Analytics Inc." along with a small chat icon.

Search

Search across all your projects and return results sorted by relevancy.

Filters

Reset

Amine Exchanger Corrosion Leaks

Anonymize Data

Unit Types

Amine Sweetening and Recovery (110 projects)

Properties

Everything will be shown.

Search

- Node
- Node Process
- Deviation
- Cause
- Consequence
- Safeguard
- Recommendation

PHA Search Results

Results

Export

26 Companies 48 Facilities 85 PHA Projects 35414 Results

Company A Score: 13.17

Refinery A

Amine Sweetening and Recovery Plant A

Node 4. Lean Amine: P-501A/B Amine Charge Pumps, P-502A/B Amine Booster Pumps, TK-501 Amine Surge Tank, TK-XXX Amine Slop Tank, E-502A/B Rich/Lean Amine Exchanger

Deviation 11. Corrosion / Erosion

Cause 1. There is significant corrosion potential in the Lean amine vessels and piping (E-502A/B Rich/Lean Amine Exchanger, and AC-501 Lean Amine Cooler etc.)

Company B

Refinery B

Amine Sweetening and Recovery Plant B

Node 4. Lean Amine (from Amine Stripper thru Lean/Rich Amine Exchanger to Lean Amine Surge Tank)

Deviation 1. -

Cause 6. leakage/upture in Lean-Rich amine exchanger