



Natural Language Queries of PHA Data

Practical and Efficient Approach Leveraging Microsoft Copilot

Introduction

- Objective
 - Get information out of PHA studies required for other tasks
 - Speed, accessibility, streamlined interaction
- Microsoft Copilot Studio
 - Commonly available, ease of use of end product
- Workflow for Tool Development
 - Exporting Data
 - “Training” – actually context development...
- Tool Deployment and Use



- FYI  wrote most of this presentation

Why natural language queries

- Traditional Methods of Accessing PHA Data:
 - Manual search through long PHA reports or spreadsheets.
 - Dependency on technical personnel familiar with PHA data structure.
 - Time-consuming process to retrieve specific insights from complex data sets.
 - Requires access to expensive proprietary data
 - Data is usually poorly structured to benefit facilitator of PHA, not users of PHA data
- Challenges with Existing PHA Data Interaction:
 - Difficulty in quickly extracting relevant safety information during audits or incident reviews.
 - Hard to navigate through layers of technical jargon for non-experts (e.g., operational staff, management).
 - Potential for missed insights due to manual filtering or misinterpretation of data.

Benefits of Natural Language Queries

- Ease of Access
- Faster Decision-Making
- Enhanced Collaboration
 - Non-technical team members (e.g., management, operations) can easily access safety-critical information through Microsoft Teams.
- Reduced Human Error
- Example Queries:
 - “What are the critical safeguards for the ammonia storage process?”
 - “Show all high-risk failure scenarios for the pump system.”
 - “What recommendations have been made but not yet implemented?”

Workflow Overview

Export PHA Data from PHA Software to Excel (CSV)

Load Excel data into Microsoft Copilot Studio

“Train” Copilot Studio on the data

Deploy Chatbot to Microsoft Teams

Interact with PHA data using natural language

Export Data to Excel (CSV)

KENEXIS OPEN PHA Texas City Gas Plant HAZOP Signed in as Edward Marszal of Kenexis

Study Data | Nodes | PHA Worksheets | **LOPA Worksheets** | Record

LOPA Worksheets

1. (HP Gas) Production Header through High Pressure Separator (V-101) to G

Deviation	Consequence	S	TMEL Safety
1.1 High Pressure	1.1.1 Potential overpressure of V-101. Potential loss of mechanical integrity. Potential rupture of High Pressure Separator	4	1E-4

Safeguards

Safeguard	Type	Tag	Independent	Auditable	Effective	PFD	Selected SIL	Reference
1 Relief valve PSV-101A opens to flare header	PSV	PSV-101A	Yes	Yes	No	0.01	No SIL	1.1.1.1 1.1.1.2
2 PT-101D high pressure shut down closes HP separator inlet valve SDV-101.	SIF	UZC-101A				0.0083	SIL 2	1.1.1.1
3 Control valve PV-101B will open to flare.	BPCS	PIC-114			Yes	0.1	N/A	1.1.1.1
4 Fire detection system allowing time for personnel evacuation	FGS				Yes		N/A	1.1.1.2 2.1.1.1

Enter Accessibility: Unavailable

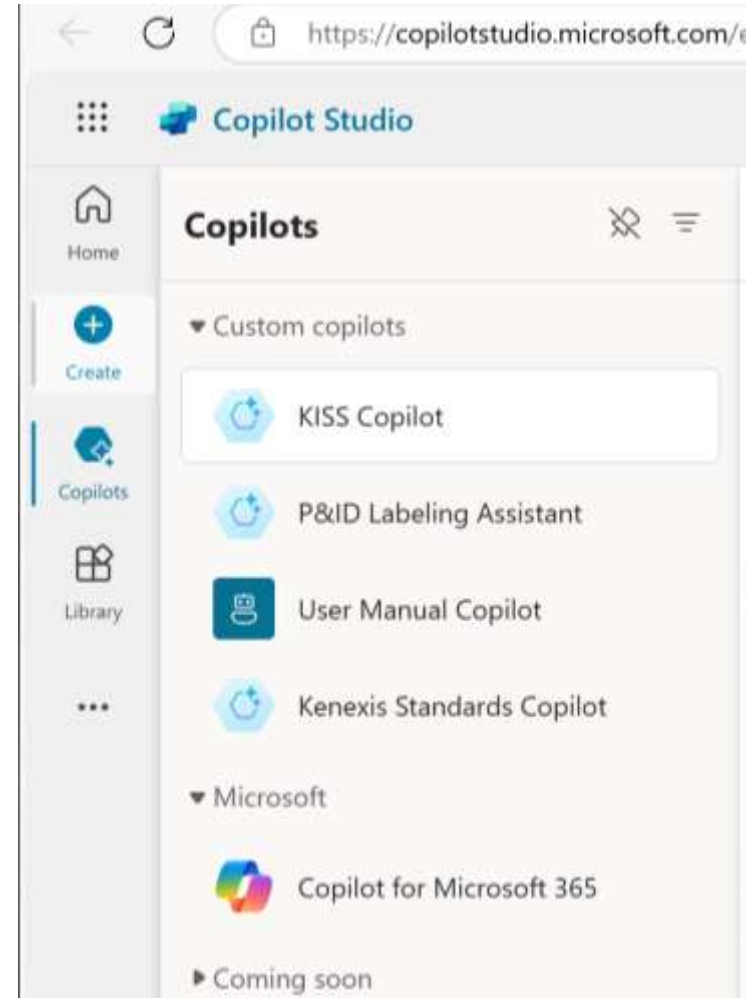
Search Worksheet...

<https://kiss.kenexis.com/OpenPha/Default.aspx#>

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Microsoft Copilot Studio – Create and Setup

- Create the copilot
- Give it a name
- Describe how the copilot will be used



Load Knowledge into Copilot

The screenshot displays the 'KISS Copilot' interface with the 'Knowledge' tab selected. A modal window titled 'Add available knowledge sources (Powered by Copilot Connectors)' is open. The modal includes a search bar for keywords, a 'Featured' section with options like 'Public websites', 'Files', and 'SharePoint and OneDrive', and a 'Connect to your enterprise data (preview)' section with options like 'Enterprise websites', 'Azure SQL', 'ADLS Gen2', 'MediaWiki', 'Salesforce', 'ServiceNow Knowledge', 'File share', 'SharePoint Server', 'CAD', 'Ade Git', 'CSV', and 'IIS'. A 'Cancel' button is at the bottom right. A blue arrow points from the 'Add knowledge' button to the 'Files' connector.

KISS Copilot Overview **Knowledge** Topics Actions +2 Test ...

+ Add knowledge

Files

Name	Type
Texas City Gas Plant HAZOP - Safeguar...	Files
Open PHA Study (1).txt	Files

Add available knowledge sources (Powered by Copilot Connectors)

Users with edit permissions for this copilot can also reuse your connections for other topics within the copilot.

Keywords for the data you're looking for

Featured

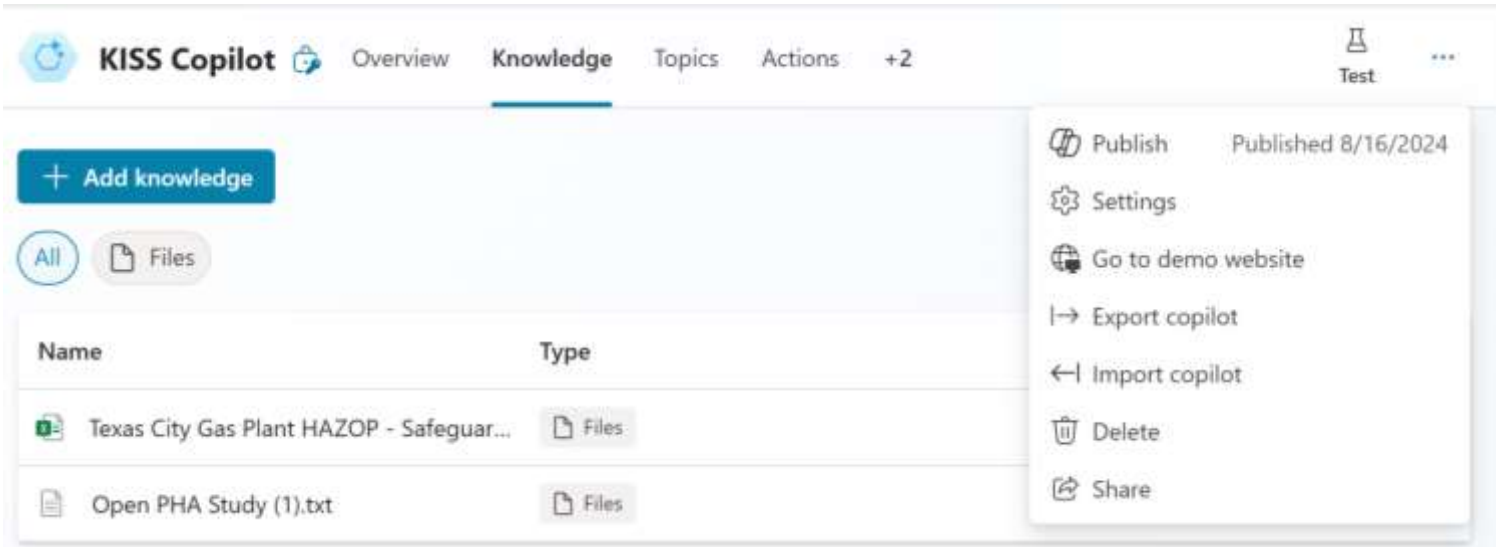
- Public websites**
Add public websites for real-time answers
- Files**
Upload documents from your local computer
- SharePoint and OneDrive**
Securely integrate and manage internal data
- Dataverse (preview)**
Customize and deploy structured data tables
- Microsoft Fabric (preview)**
Accelerate data analysis with AI capabilities

Connect to your enterprise data (preview)

- Enterprise websites
- Azure SQL
- ADLS Gen2
- MediaWiki
- Salesforce
- ServiceNow Knowledge
- File share
- SharePoint Server
- CAD
- Ade Git
- CSV
- IIS

Cancel

Publish Copilot – Training

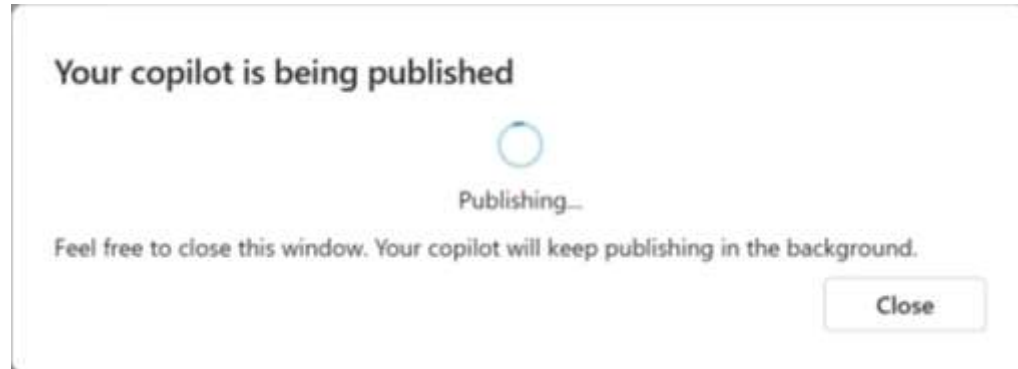


The screenshot shows the KISS Copilot interface. At the top, there is a navigation bar with "KISS Copilot" and tabs for "Overview", "Knowledge", "Topics", "Actions", and "+2". A "Test" button is visible on the right. Below the navigation bar, there is a "+ Add knowledge" button and a filter section with "All" and "Files" options. A table lists knowledge items:


Name	Type
Texas City Gas Plant HAZOP - Safeguar...	Files
Open PHA Study (1).txt	Files

A context menu is open over the "Texas City Gas Plant HAZOP - Safeguar..." item, showing the following options:

- Publish (Published 8/16/2024)
- Settings
- Go to demo website
- Export copilot
- Import copilot
- Delete
- Share



Your copilot is being published


Publishing...

Feel free to close this window. Your copilot will keep publishing in the background.

[Close](#)

Set Teams up as a Channel

The screenshot shows the 'Channels' configuration page for the 'KISS Copilot'. The left sidebar contains navigation options: Home, Create, Copilots, Library, and a menu icon. The main content area is titled 'Channels' and includes a warning message: 'Because you chose Teams Authentication, only Teams channel is available. To use other channels, change your authentication settings. [Go to authentication settings.](#)' Below this, there is a 'Published copilot status' section with a 'Publish' button and a status indicator showing 'Published by Edward Marszal 9/17/2024, 3:39 PM'. The 'Channels' section is titled 'Configure your copilot channels to meet your customers where they are.' and displays a grid of channel options, each with a toggle switch:

- Telephony
- Microsoft Teams (checked)
- Demo website
- Custom website
- Mobile app
- Facebook
- Skype
- Slack

Open Copilot in Teams

The screenshot displays the Microsoft Teams interface for managing applications. The left-hand navigation pane includes icons for Activity, Chat, Teams, Calendar, Calls, OneDrive, and Admin. The main content area is titled "Manage your apps" and features a search bar and options to "Get more apps" or "Upload an app". A list of installed apps is shown, including:

- Admin** (Microsoft Corporation) with an "Update" button.
- KISS Copilot** (Custom app).
- Planner** (Microsoft Corporation).
- OneNote** (Microsoft Corporation).
- Whiteboard** (Microsoft Corporation).
- YouTube** (Microsoft Corporation).
- Kenexis Standards Copilot**.

Make Natural Language Queries in Teams

Kenexis Consu... EM

KISS Copilot Chat Files

3:57 PM

What is the SIL target associated with the high pressure shutdown on the high pressure separator?

Last read

KISS Copilot 3:57 PM

The SIL target associated with the high pressure shutdown on the high pressure separator is SIL 2 1.

This message has been deleted. [Undo](#)

KISS Copilot 3:58 PM

I'm sorry, I'm not sure how to help with that. Can you try rephrasing?

3:58 PM

What PFD was assigned to relief valve PSV-101A?

KISS Copilot 3:58 PM

The relief valve PSV-101A was assigned a PFD of 0.01 1.

Type a message

Signed in as Edward Marszal of Kenexis

Recommendations Safeguards Premium Tools Back

Search Worksheet...

Priority	Causes		IPLs			MEL Safety
	IPL	Type	Tag	PFD	Selected SIL	
	1 Relief valve PSV-101A opens to flare header	PSV	PSV-101A	0.01	No SIL	8.30E-7
	2 PT-101D high pressure shut down closes HP separator inlet valve SDV-101.	SIF	UZC-101A	0.0083	SIL 2	
	5 PT-101D low pressure shut down mitigates hazard by closing SDV-101.	SIF		0.1		
	1 Relief valve PSV-101A opens to flare header	PSV	PSV-101A	0.01	No SIL	

Summary

- **Enhanced Accessibility:** Natural language queries allow non-technical users to interact with PHA data easily, democratizing access across teams
- **Faster Decision-Making:** Immediate responses to safety-related queries reduce the time spent searching through lengthy reports, enabling quicker insights
- **Improved Collaboration:** Integration with Microsoft Teams enhances team collaboration by allowing real-time querying of PHA data during meetings, safety audits, and incident investigations.
- **Reduced Human Error:** Automation reduces the risk of oversight or misinterpretation when searching manually through complex datasets
- **Easy Implementation**

PMP Project Fall 2024

- Karan Santash Nair (Open to Work)
- PHA Setup Automation with AI Assistance
- HAZOP Process Safety Assistant
 - <https://chatgpt.com/g/g-vqA3KJJJs-hazop-process-safety-assistant>
- Develop Drawing List, Node List, and Deviations for Nodes
- Based on Upload of P&IDs

HAZOP Process Safety Assistant



PFD & P&ID's.pdf
PDF

Please prepare tables for drawings, nodes, and deviations per node from the uploaded set of P&IDs



Here is the information extracted from the uploaded drawings, organized into tables for Drawings, Nodes, and Deviations per Node.

1. Drawings Table

Drawing (Sheet Number)	Revision	Drawing Type	Description	Link
1D-254-001 (Sheet 1 of 6)	1	Process Flow Diagram (PFD)	Gas Production Facility	[Drawings] [7]
1D-254-002 (Sheet 2 of 6)	1	Legend Sheet	Symbol Legend	[Drawings] [7]
1D-254-002 (Sheet 3 of 6)	1	P&ID	High Pressure Separator	[Drawings] [7]
1D-254-002 (Sheet 4 of 6)	1	P&ID	Low Pressure	[Drawings]



Questions?

