IMPACT OF AI IN HAZARD COMMUNICATION – CHALLENGES AND PRACTICAL SOLUTIONS

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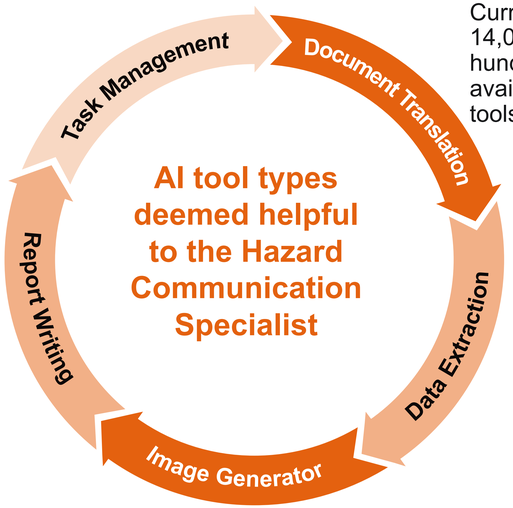
ABSTRACT

Advances in Artificial intelligence (AI) are increasing and are rapidly transforming the chemical sector, and hazard communication is one area where AI could have a significant impact. Although the use of AI in hazard communication is still in its early stages, it has the potential to revolutionize the way chemical hazards are identified and communicated. AI can help to make hazard information more accurate, accessible, and understandable, which can help to improve worker safety and protect public health. This poster will review ways AI is being used in hazard communication, some identified limitations, and real-world insights from a test case using AI technology.

AI TOOLS



Currently, there are more than 14,000 AI start-ups in the US and hundreds of thousands of AI tools available for use. Some of these tools can achieve the following:

- Automate many repetitive/time-consuming tasks freeing up humans to focus on more strategic work.
- Improve efficiency and accuracy by quickly and easily searching information on chemical hazards and associated risks.
- Provide new insights and discoveries by analyzing data in ways that were not possible before.

Some common AI tools that can be used independently or combined

Data Extraction

- Browse AI
- ChatGPT
- Nanonets
- Octoparse (websites)

Translations

- Azure
- ChatGPT
- DeepL
- Google Translate

Task Management

- ClickUp
- Otter AI
- Taskade
- Trello

Report Writing / Presentation Preparation

- AI Picasso
- Beautiful.ai
- Grammarly Business Reports
- Sendsteps AI

Arcadis does not endorse the use of any of the AI tools listed on this presentation. The AI tools are listed for informational purposes only.

TRANSLATIONS – Test Case 1

Maintaining accuracy in translating Safety Data Sheets (SDSs) into different languages is crucial, but it can be a costly and time-consuming task that also carries the risk of incorrect translations. To evaluate for accuracy, we utilized three comparable tools (Azure, ChatGPT, and DeepL) and compared the Mexican-Spanish translation of an English SDS with a standard SDS for the Spanish product. The analysis revealed the following outcomes.

Accuracy: 20% of DeepL translations, 32% of ChatGPT, and 35% of Azure translations did not match (in meaning or synonym) with the standard Spanish product SDS.

Quality: DeepL produced a fully formatted translated document, but ChatGPT and Azure documents needed formatting after translation. All three AI tools had spelling errors.

Feasibility: With DeepL, we were able to translate a formatted document without any character limits. It accepted scanned and digital documents for translation.

Additional details:

- Azure accepted both scanned and digital documents without character limits.
- ChatGPT only accepted digital documents with character limits.

Insights learned:

- All AI translation tools are not created equal. It's vital to note that larger and more intricate documents require more time and thorough review.
- For any language translation it is essential to have a native / fluent speaker conduct a review or use a comprehensive language library for consistency.
- Certain tools provide free translations. DeepL offers translations for 31 languages, Azure offers translations for 69 languages, and ChatGPT offers translations for more than 90 languages.

DATA EXTRACTION – Test Case 2

AI tools are becoming effective in extracting data from structured and unstructured sources which historically has been a tedious and time-consuming task for the hazard communication specialist. Combining AI tools is a way to build robust solutions.

For example, in using an internally designed Python-based tool to extract information and convert it into a single document that can be used for gap analysis. The following benefits were observed.

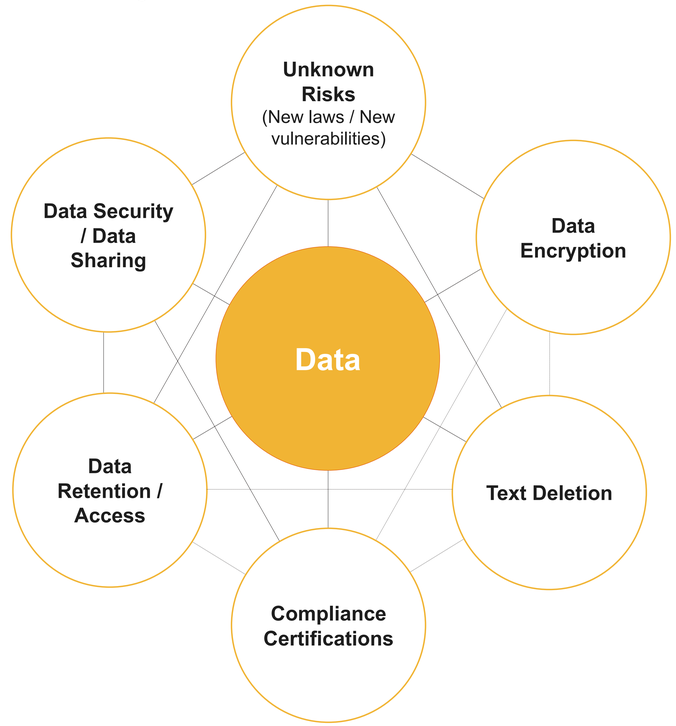
Accuracy: The Python-based tool had a 90% accuracy rate, with occasional missed text at the end of documents.

Quality: Produced a consistent and sustainable report for review.

Proficiency: Transformed a process that took 2-3 hours to minutes.

SECURITY

As expected, there are risks to using commercially available AI tools. Along with possible “data poisoning” and “data bias”, not all tools may offer a secure environment to protect your data. Remember to review the Privacy Notice of each tool before use. Privacy Notice information that should be considered before using AI tools:



CONCLUSION

- By combining AI tools with human expertise, we can achieve powerful results.
- It is important to review the various AI tools and ensure they provide a secure environment for data while protecting intellectual property and maintaining confidentiality.
- It is essential to understand the timeliness of the information obtained from AI tools and fact-check all data. Note that recent regulatory changes may not be captured in current AI databases.
- As AI continues to develop, we can expect to see even more innovative and beneficial uses.

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