

The Ethics of Using Artificial Intelligence Chatbots in Occupational Health and Safety

Tom Peters, PhD, CIH, FAIHA

University of Iowa

Outline

- Introduction (10 min)
- Refresher on ethics in industrial hygiene (15 min)
- Hands-on tutorial with a chatbot (10 min)
- Ethical considerations (15 min)

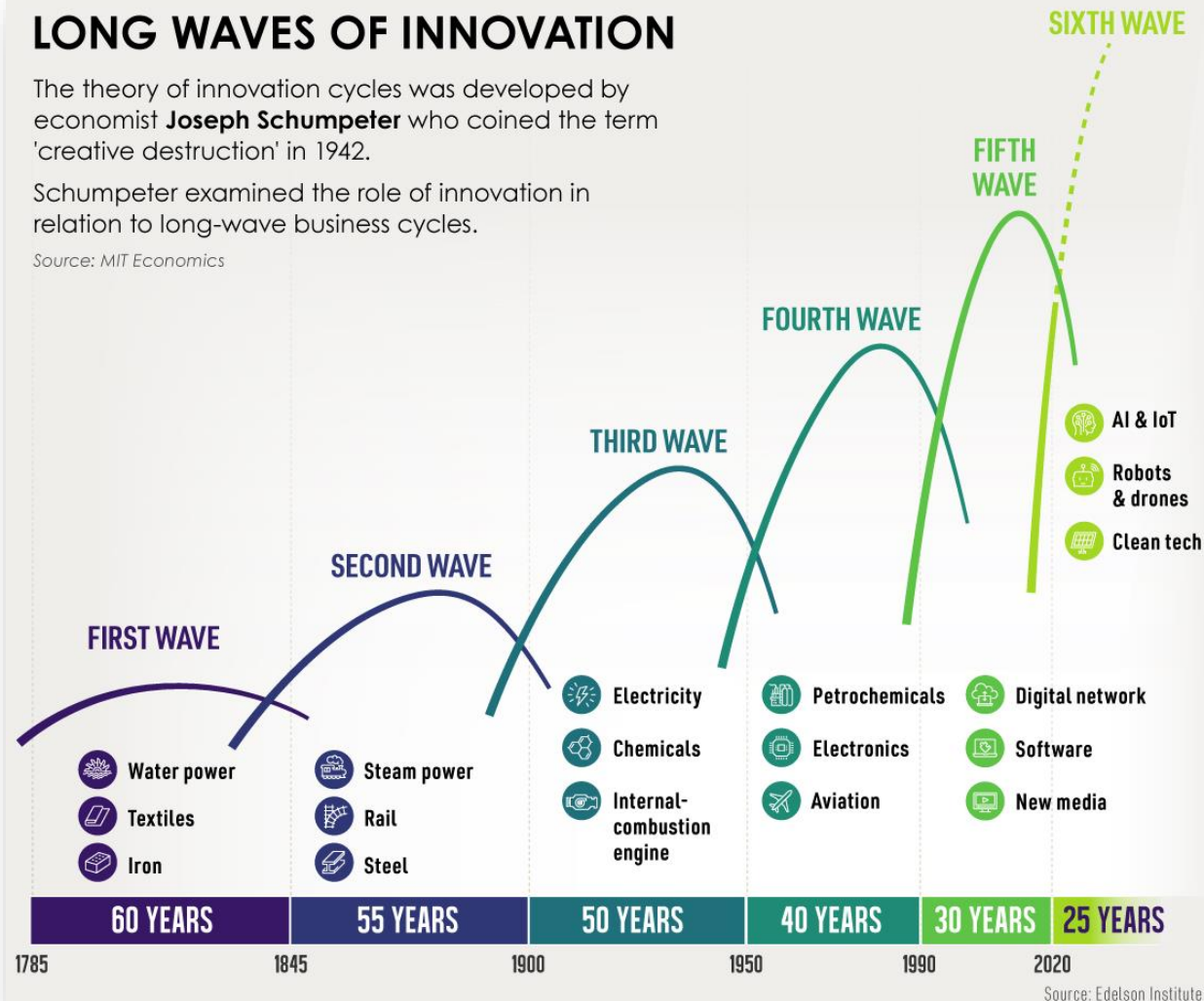
The Waves of Innovation

LONG WAVES OF INNOVATION

The theory of innovation cycles was developed by economist **Joseph Schumpeter** who coined the term 'creative destruction' in 1942.

Schumpeter examined the role of innovation in relation to long-wave business cycles.

Source: MIT Economics



- Major innovation cycles
 - Improve living standards
 - Promote economic growth
- Happen more rapidly over time
- Open paths for monopolies
 - Rail industry
 - Search engines
 - Social networks

<https://www.visualcapitalist.com/the-history-of-innovation-cycles/>

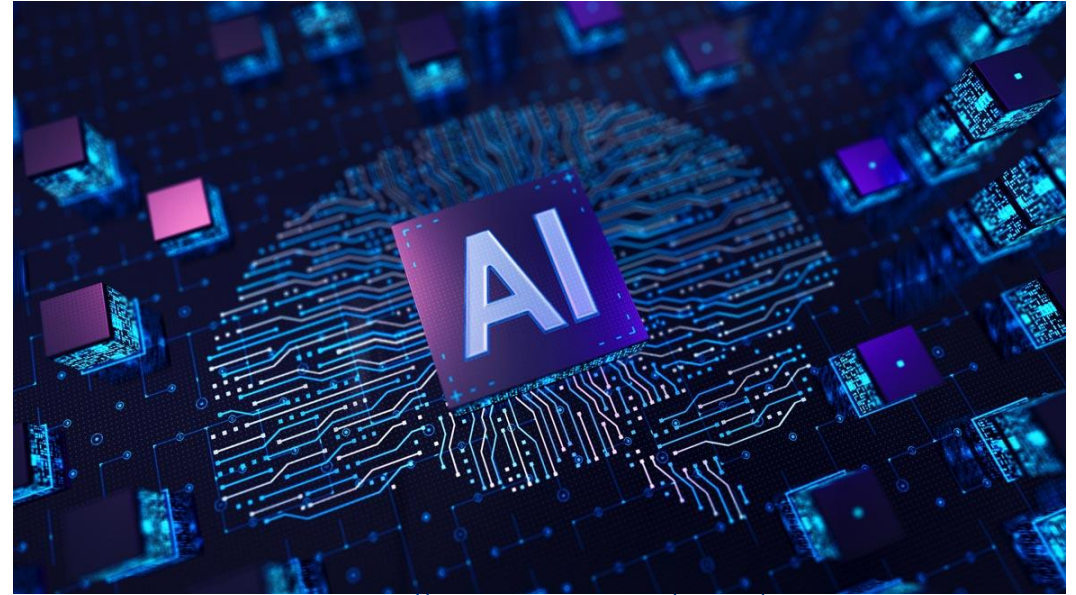
Each Wave Changes How We Work... And the Hazards We Are Exposed To





Artificial Intelligence (AI)

- Key to the sixth wave
- Branch of computer science
 - Create intelligent agents that can reason, learn, and act autonomously
 - Replicate human analytical and/or decision-making capabilities
- Common approaches
 - Machine learning
 - Natural language processing
 - Computer vision

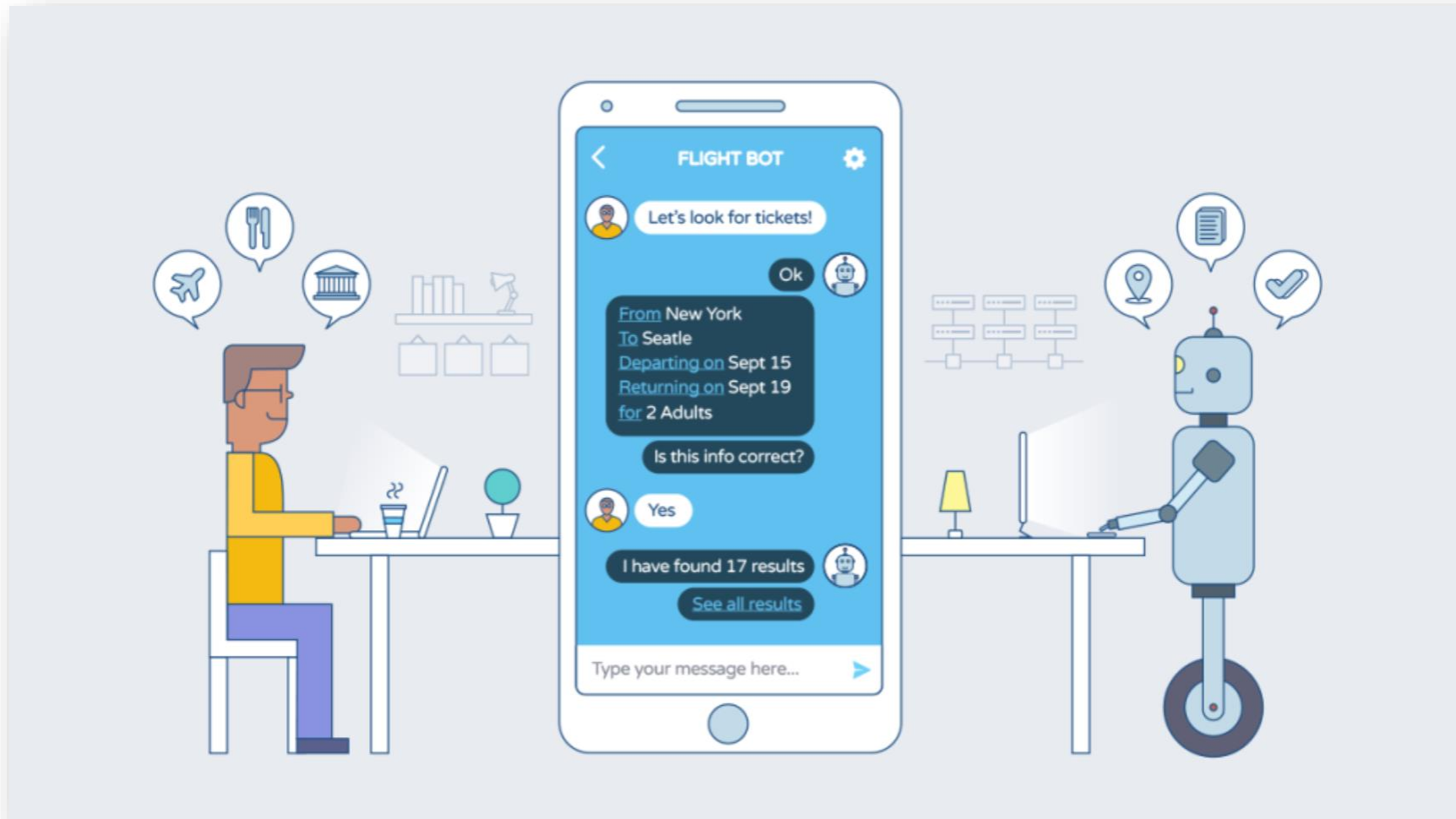


<https://www.qualitymag.com/articles/97455-the-progression-of-artificial-intelligence>

Examples of machine learning

- Email spam filtering
- Image recognition
- Virtual personal assistants
- Language translation
- Traffic prediction
- Online fraud detection
- Medical diagnostics
- Text and speech recognition

What are Chatbots?



ChatGPT is a Particular Chatbot

8/24/23, 4:45 PM

How ChatGPT Kicked Off an A.I. Arms Race - The New York Times

THE SHIFT

How ChatGPT Kicked Off an A.I. Arms Race

Even inside the company, the chatbot's popularity has come as something of a shock.



By Kevin Roose

Feb. 3, 2023

The Washington Post

Democracy Dies in Darkness

TECH Help Desk Artificial Intelligence Internet Culture Space Tech Policy

Lifesaver or job killer? Why AI tools like ChatGPT are so polarizing.

Hype and fear collide in the tech industry's latest boom



By Will Oremus

March 12, 2023 at 7:00 a.m. EDT



(The Washington Post illustration; Frank Kelly Freas; iStock)

Listen 7 min Share Comment 117

ChatGPT reaches 100 million users two months after launch

Unprecedented take-up may make AI chatbot the fastest-growing consumer internet app ever, analysts say



ChatGPT is owned by Microsoft-backed company OpenAI. Photograph: Pavlo Gonchar/Sopa Images/Rex/Shutterstock

I asked ChatGPT: “What is ChatGPT?”

<https://chat.openai.com/>

- **Type:** Conversational agent or chatbot
- **Architecture:** Based on Generative Pre-trained Transformer (GPT), specifically GPT-3 or GPT-4 depending on the version.
- **Developer:** OpenAI
- **Functionality:**
 - Engages in text-based conversations
 - Provides informative and coherent responses
 - Can generate creative text like stories or poems
- **Training Data:**
 - Trained on a large corpus of text
 - Learns the structure, semantics, and nuances of human language
- **Limitations:**
 - Doesn't possess beliefs, emotions, or consciousness
 - Generates text based on statistical patterns in training data
 - Information is up to a certain cutoff date, not real-time

There are many others...

- Claude AI
- Bard
- Perplexity AI

Chatbots in OSH and Ethics

- Today, I will tutor you how to use a chatbot in OSH
- I will raise ethical concerns regarding using a chatbot in OSH
- First, we need to refresh our memory on ethics

What Are “Professional Ethics”?

- Accepted standards of practice that guide members of professional organizations to perform a job according to sound, consistent, agreed-upon principles
- Accepted ways to use specialized knowledge and skills
- Knowing what is right from wrong in your professional life



Codes of Ethics

- A set of rules and principles designed to encourage ethical conduct of a group of professionals
- Common goal to protect the health and well-being of the public / people served
- Each profession outlines specific skills that define 'ethical' conduct



Industrial Hygiene
Occupational Health Nurses
Safety Professionals
Professional Ergonomists
Occupational and Environmental Medicine

Ethical Behavior

- Builds trust and loyalty among clients, employees, and the community
- Helps you develop a reputation and competitive edge
- Minimizes conflict
 - Ease tensions
 - Helps sort out priorities
 - Improves transparency
 - Enhances accountability
 - Provides guidance on how to act “in difficult times”
- Helps us communicate our position to bosses



Industrial Hygiene Code of Ethics

- Maintained by the Board for Global EHS Credentialing (BGC)
- Applies to each individual certified by BGC credentialing programs (certificants) and each individual seeking certification (candidates)
- Serves as the minimum ethical standards for the professional behavior of BGC certificants and candidates

Code of Ethics

Adopted: 9/22/2019

Revised: 11/18/2019

Effective: 11/18/2019 (CPPS); 7/1/2020 (CIH, QEP, EPI)
3/1/2021 (CPEA, CPSA)



<https://gobgc.org/wp-content/uploads/2023/01/BGC-Code-of-Ethics-2020-11-16-Final-Approved-WEB.pdf>

A. Responsibilities to professional organizations, the profession, and the public

1. Comply with laws, regulations, policies, and ethical standards
2. Provide accurate and truthful information
3. Cooperate with professional associations and credentialing organizations
4. Report apparent violations of applicable ethical standards
5. Refrain from any public behavior that is clearly in violation of accepted professional, ethical or legal standards
6. Promote equal opportunity and diversity in professional activities
7. Support and disseminate the association's ethics principles

I. Responsibilities to professional organizations, the profession, and the public

- A. To satisfy organizational and legal policies and rules
 - 1. Comply with laws, regulations, policies, and ethical standards
 - 2. Provide accurate and truthful information
 - 3. Cooperate with professional associations and credentialing organizations
 - 4. Report apparent violations of applicable ethical standards
 - 5. Refrain from any public behavior that is clearly in violation of accepted professional, ethical or legal standards
 - 6. Promote equal opportunity and diversity in professional activities
 - 7. Support and disseminate the association's ethics principles

II. Responsibilities to clients, employees and the public

A. To provide ethical professional services

1. Deliver competent services in a timely manner with objective and independent professional judgment
2. Recognize limitations of one's professional ability, and provide services only when qualified
3. Provide appropriate professional referrals
4. Maintain confidentiality of sensitive information
5. Properly use professional credentials
6. Provide truthful and accurate representations
7. Recognize and respect the intellectual property rights of others
8. Authorize the use of stamp or signature only when the document is prepared by self someone under his/her direction and control
9. Refrain from business activities and practices that unlawfully restrict competition.

II. (continued)

- Concerning conflicts of interest
 1. Disclose circumstances that could be construed as a conflict of interest, or an appearance
 2. Avoid conduct that could cause a conflict of interest
 3. Assure conflict of interest does not compromise legitimate interests of a client, employer, employee, or the public and does not influence/interfere with professional judgments
 4. Refrain from offering, or accepting inappropriate payments, gifts, ... intended to influence professional judgment.

Ethics Gone Bad

Goldberg & Greenburg (1993) AIHA J (54) March, 127

Survey to all members of AIHA-New Jersey Section.
Response: N=143 (26%)

Type of Misconduct	Percent of Respondents Observing
Deliberate overstatement of positive and understatement of negative results	36%
Refraining from reporting an incident	30%
Failure to share credit on a publication	26%
Deliberate failure to acknowledge data limitations	26%
Holding back findings to avoid negative results	26%
Plagiarism	23%
Borrowing from another's proposal	21%
Deliberate failure to control data quality	21%
Failure to protect confidential data	20%
Release results before peer review	19%

Ethical Misconduct in Britain

Burgess & Mullen (2002) AIHA J (63) Mar/Apr, 151

Survey to 50 members of BOHS; behaviors witnessed in past 5 yr; 43 completed survey; 10 respondents observed no negative behaviors

Type of Misconduct	Percent of Respondents Observing
Plagiarism	51%
Failure to protect confidential data	37%
Failure to share credit on a publication	27%
Fabrication of data	25%
Criticize integrity of another hygienist for gain	23%
Holding back or disguising data	19%
Survey design to favor desired outcome	11%
Destruction of data contradicting desired outcome	7%
Deliberately not reporting incident	7%

Causes of Ethical Dilemmas

Goldberg & Greenburg (1993) AIHA J (54) March, 127

Cause	Percent Responding “Extremely Important”
On-the-job pressure	57%
Pressure from economic implication of results	53%
Lack of experience	47%
Pressure from implications of results	41%
Poor design of study	40%
Friendship with “whistle blower”	40%
Competition with peers	39%
Lack of training in ethics	36%
Poor implementation of study design	35%
Lack of communication skills	33%
Pressures not related to job	15%

OSH Values Operationalized

Ethical Values	Behavior at Work
Follow recognized science	<ul style="list-style-type: none">● Stick to the facts● Use NIOSH/EPA procedures, accredited labs
Counsel parties factually	<ul style="list-style-type: none">● Use reliable sources● Communicate findings to all affected parties
Avoid conflicts of interest	<ul style="list-style-type: none">● Don't accept gifts to influence outcome● Take on only as much work as you can complete
Practice only in areas of competence	<ul style="list-style-type: none">● Only work in areas where you are qualified● Seek training, certification or registration in these areas
Act with integrity	<ul style="list-style-type: none">● Behave in a manner that reflects well on profession● Don't misrepresent yourself, or engage in fraudulent activities

Intervention:

Setup Your Team for Success

- Establish workplace expectations
- Routinely discuss ethical situations using the legal, smell, front-page, and mom tests
- Discuss role models and ethics
- Acknowledge and discuss ethical treatment of others, rewarding deserving individuals

Enter ChatGPT

- Natural language processing tool driven by AI and made by OpenAI
- Allows you to have human-like conversations
- Text produced is generally
 - Grammatically correct
 - Relevant
 - Plausible

GPT: generative pre-training transformer

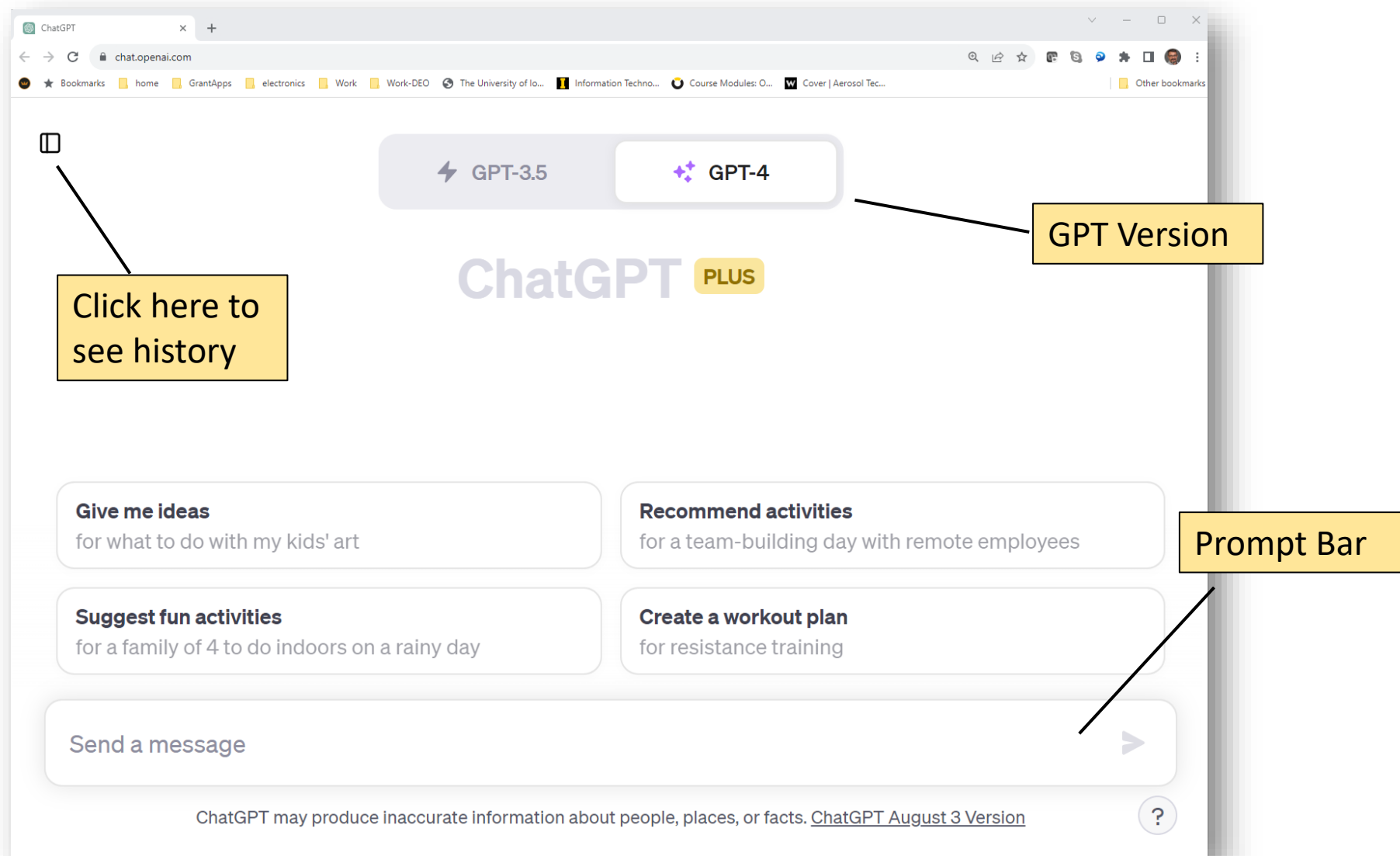
<https://www.learnprompt.org/how-to-use-chatgpt/>

How to use ChatGPT to:

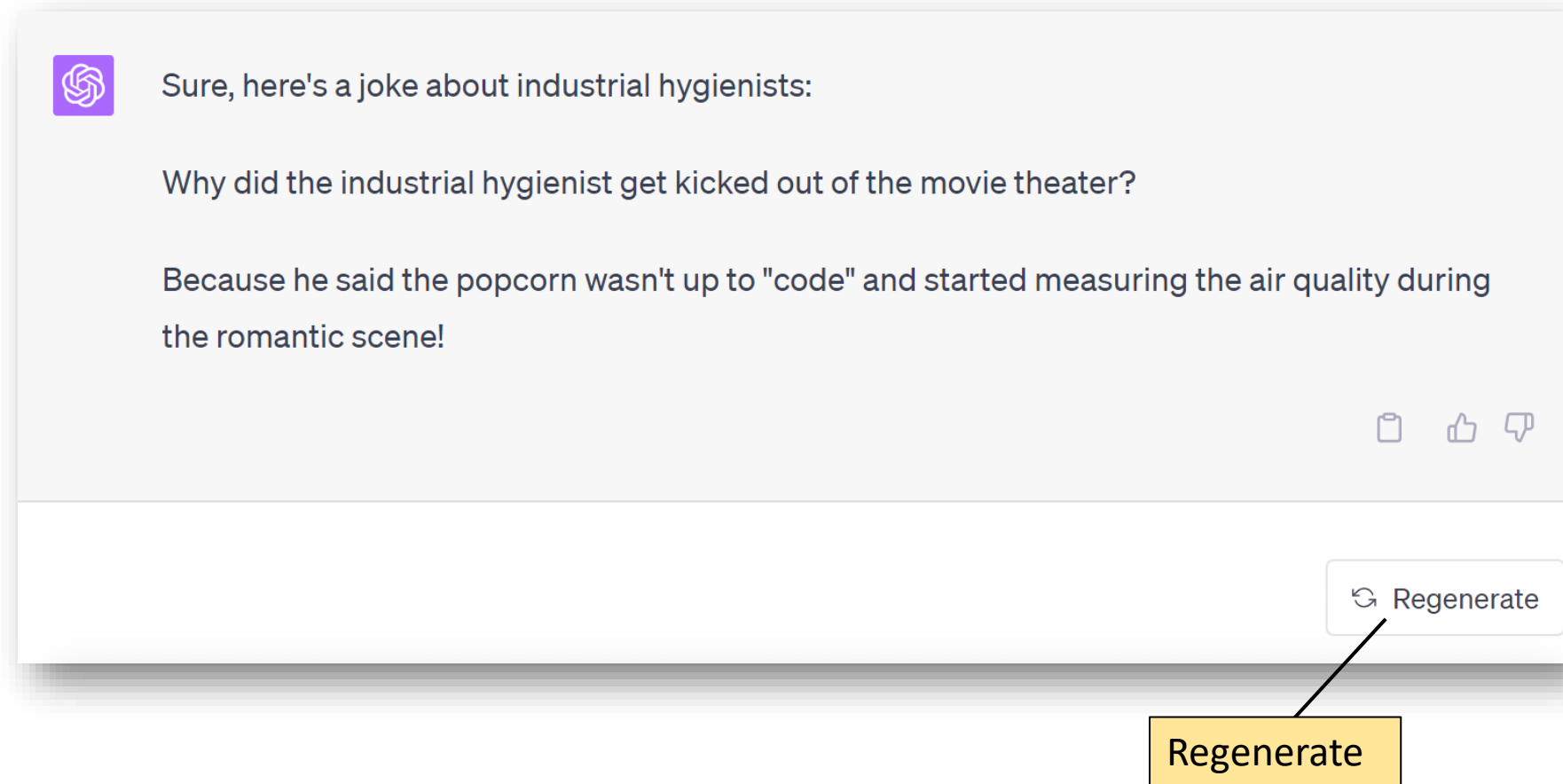
- [Write an essay](#)
- [Create an app](#)
- [Write code](#)
- [Build your resume](#)
- [Write Excel formulas](#)
- [Summarize content](#)
- [Write a cover letter](#)

ChatGPT Interface

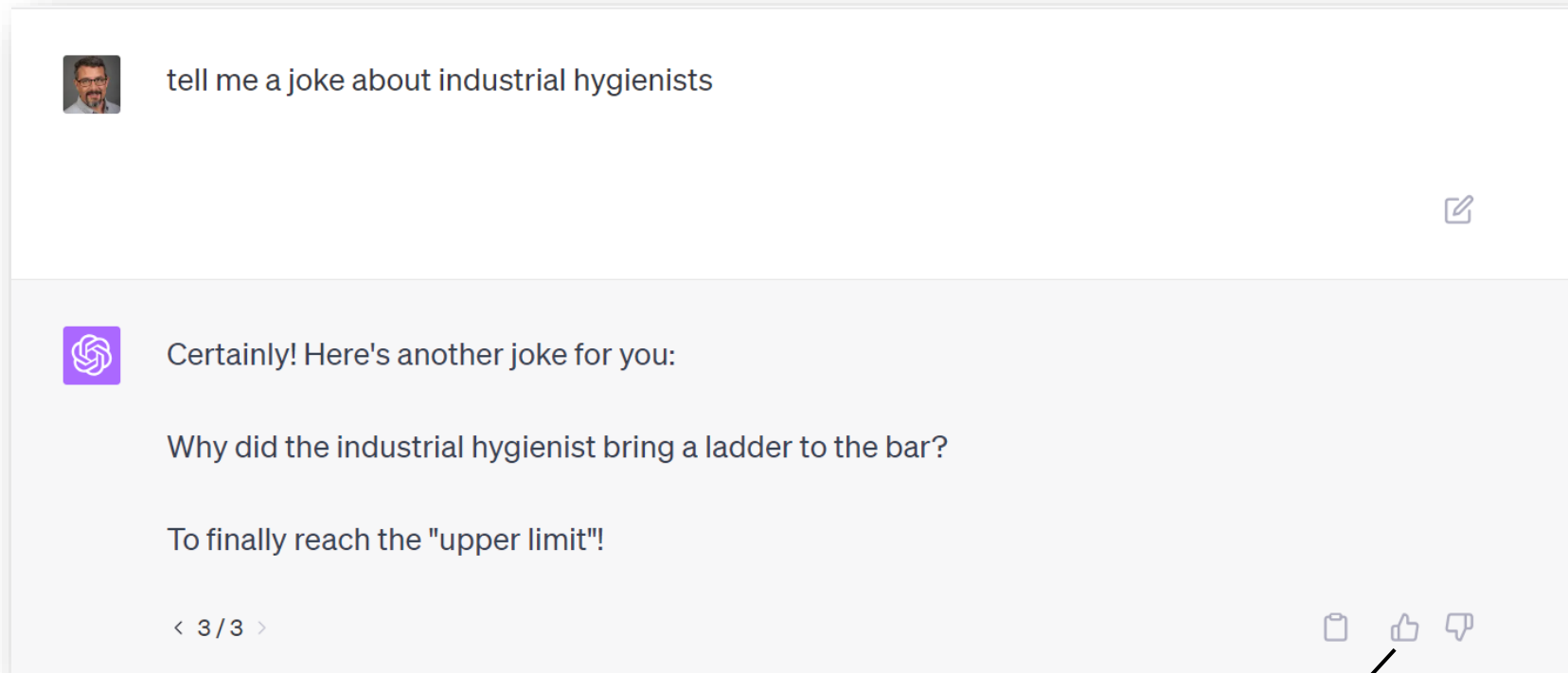
<https://chat.openai.com/>



Prompt “tell me a joke about industrial hygienists”



Hit Regenerate Four Times



Like or dislike helps train the predictive model for you

Prompt Engineering

- Task
 - Include an action verb
 - Be specific
- Context
 - Limit huge universe of information
- Exemplars
 - Helps AI produce accurate results
- Persona
 - Defines output language level
- Tone
 - Defines output tenor
 - <https://www.learnprompt.org/writing-styles-for-chat-gpt-prompts/>

“**Write** an essay on the health hazards in the dry-cleaning industry.”

“I am helping my son do his 6th grade homework assignment.”

“Write to a 6th grade level and limit to 200 words.”





“Make it fun.”

The Mysterious World of Dry Cleaning: Not Always Squeaky Clean!

Did you know that there's a secret world hidden behind the clean shirts and dresses in your closet? Yes, I'm talking about the world of dry cleaning! But beware, it's not all sparkly and shiny. There are sneaky villains in this world: health hazards!

First, meet our main villain: "Perc". Sounds like a friendly name, right? Nope! Perc, short for perchloroethylene, is a chemical used in many dry cleaning shops. While it's great at fighting tough stains, it's not so great for our health. If workers breathe it in a lot, it can make them dizzy, and in the long run, it's not good for their organs.

Then there's the danger of pressing machines. Ever seen how hot a clothes iron can get? Well, imagine BIG machines that press clothes with heat and steam. If not used carefully, they can cause burns.

But don't worry! Many dry cleaners are now turning into superheroes. They're using safer chemicals and machines. They wear protective gear and make sure they're in well-ventilated areas. So, the next time you pick up your clothes, maybe give a secret nod to those unsung heroes keeping both your clothes and themselves safe!    

“Help me prepare for an interview as an industrial hygienist”

Preparing for an interview as an industrial hygienist involves a combination of technical knowledge, understanding of industry regulations, and soft skills like communication and problem-solving. Here is a guide to help you get ready:

Research

1. **Company Background:** Research the company's culture, mission, projects, and clients. This will help you tailor your answers and ask meaningful questions during the interview.
2. **Job Description:** Thoroughly read the job description to understand what the company is looking for in a candidate. Tailor your preparation to these requirements.

Technical Preparation

1. **Review Basics:** Make sure you're comfortable with basic principles of industrial hygiene such as exposure assessment, control strategies, and risk management.
2. **Regulations and Standards:** Be familiar with relevant industry standards (e.g., OSHA, NIOSH) and regulations.
3. **Equipment:** Know the types of monitoring equipment used in the field, and how data is collected and analyzed.



↻ Regenerate

More provided!

- Soft skills
- Possible interview questions
- Questions to ask
- Other tips (dress, body language, follow-up)

“Provide common interview questions asked of industrial hygienists



Certainly! Here are some common interview questions that are often asked of candidates for industrial hygienist positions:

Technical Questions

1. What is the hierarchy of controls, and how do you apply it in a workplace setting?
2. Can you explain the significance of Permissible Exposure Limits (PELs) and how they are determined?
3. Describe your experience with exposure assessments. What methods and equipment have you used?
4. How do you interpret and use data from air sampling tests?
5. What steps would you take to evaluate noise exposure in a workplace?
6. How do you assess the risks associated with biological hazards like mold or bacteria?
7. Can you explain what Material Safety Data Sheets (MSDS) are, and how they are used in industrial hygiene?
8. What are some ergonomic risks that industrial hygienists should be concerned about?

More provided!

- Situational questions
- General and soft skill questions
- Questions for the company

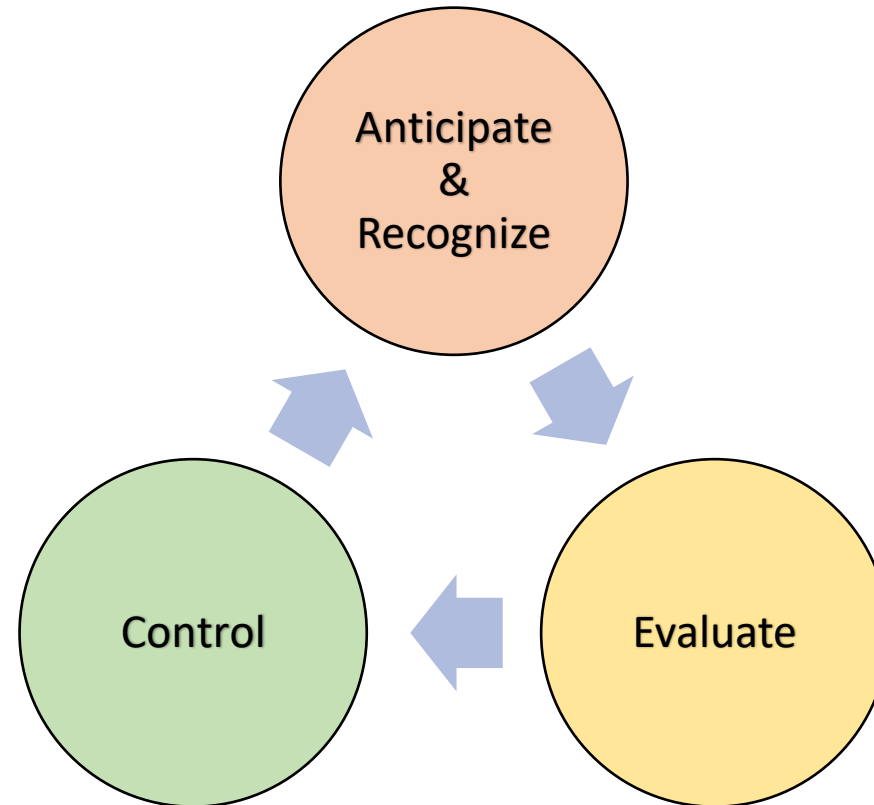
How Can I Use Chat AI at Home

- Recipes
 - “Please give me a recipe that uses carrots, onions, chicken, and pasta?”
 - “Give me recipes that have no gluten or dairy in them”
- Restaurants
 - "Can you help me find somewhere to eat in NYC that serves Latino food and is open for happy hour?"
- Making a drink
 - "What sweet cocktails can I make with rum?"
- Date night
 - "Can you give me a date idea that is indoors and low budget?"



How Can I Use a Chatbot as an IH?

- Identify processes for a certain industry
- Anticipate hazards for those processes



- Training
- Worker communications

- Prepare for sampling
- Analyze data
- Write reports
- Communicate results

Anticipate and Recognize

- IH from foundry calls you for help
 - Respond “I’m busy now but can call you back?”
 - **Get your chatbot on!!!**
- Find out what a foundry does
 - “What are the major processes in a foundry?”
- Recognize the hazards in a foundry?
 - “What are the hazards involved in this environment?”
 - “Expand on respiratory hazards?”
 - “How do you sample for silica dust?”
 - “Please put this in table form.”



Evaluate

- Chatbots can't sample, but can get us ready
- Organize field measurements
 - “prepare a checklist for personal air sampling for crystalline silica”
 - “prepare a datasheet for above”
- Help with a questionnaire
 - “generate a questionnaire for workers in a foundry who are responsible for cleaning castings”



Evaluate – Analyze Data

“write r code to analyze 30 exposure measurements”



Certainly! To analyze 30 exposure measurements in R, you can perform basic statistical analysis and graphical visualization. Here's a sample R code snippet that demonstrates how to do that.



Let's assume you have 30 exposure measurements stored in a CSV file called ``exposure_data.csv`` and the measurements are in a column called ``measurement``.

R

 Copy code

```
# Load necessary libraries
library(tidyverse)
library(ggplot2)

# Read the data from CSV
exposure_data <- read_csv("exposure_data.csv")
```

Evaluate – Help with Reporting

“what are the occupational exposure limits for welding fume”

The occupational exposure limit (OEL) for welding fume is an 8-hour time-weighted average (TWA) of 5 mg/m³ for welding fumes, measured as total particulate in the welder's breathing zone. This means that the average concentration of welding fume in the air that a welder breathes in over an 8-hour workday should not exceed 5 mg/m³.

The OEL for welding fume is set to protect workers from the health risks associated with exposure to welding fume. These risks include:

More provided on respiratory, skin, and eye hazards

More provided on PPE

Cautionary tale
coming up in
the last section

Evaluate – Help with Reporting

“reduce this to 100 words and write for a lay audience”



reduce this to 100 words and write for a lay audience



The amount of fumes that a welder can safely be exposed to varies depending on the type of metal being welded. In the U.S., safety guidelines say that exposure to general welding fumes shouldn't exceed a certain limit over an 8-hour workday. For example, the limit for chromium and lead is much lower than for iron or aluminum because they're more harmful. Different organizations have different safety recommendations, but all aim to protect workers from harmful exposure. It's important for welding workplaces to check the levels of fumes and make sure they're within safe limits to protect workers' health.



Evaluate - Write a section of a report

“describe the operation of a bag house”

A baghouse is a type of air pollution control device that uses fabric filters to remove particulate matter from air streams. The dirty air stream enters the baghouse through hoppers and is directed into the baghouse compartment. The gas is drawn through the bags, either on the inside or the outside depending on cleaning method, and a layer of dust accumulates on the filter media surface until air can no longer move through it.

There are two main types of baghouses:

- Pulse-jet baghouses: These baghouses use a series of compressed air pulses to clean the filter bags. The pulses of air cause the bags to collapse, which dislodges the dust cake from the filter media. The dust falls into a hopper below the bags, where it can be collected and disposed of.
- Shaker baghouses: These baghouses use a shaking mechanism to clean the filter bags. The shaking mechanism causes the bags to vibrate, which dislodges the dust cake from the filter media. The dust falls into a hopper below the bags, where it can be collected and disposed of.

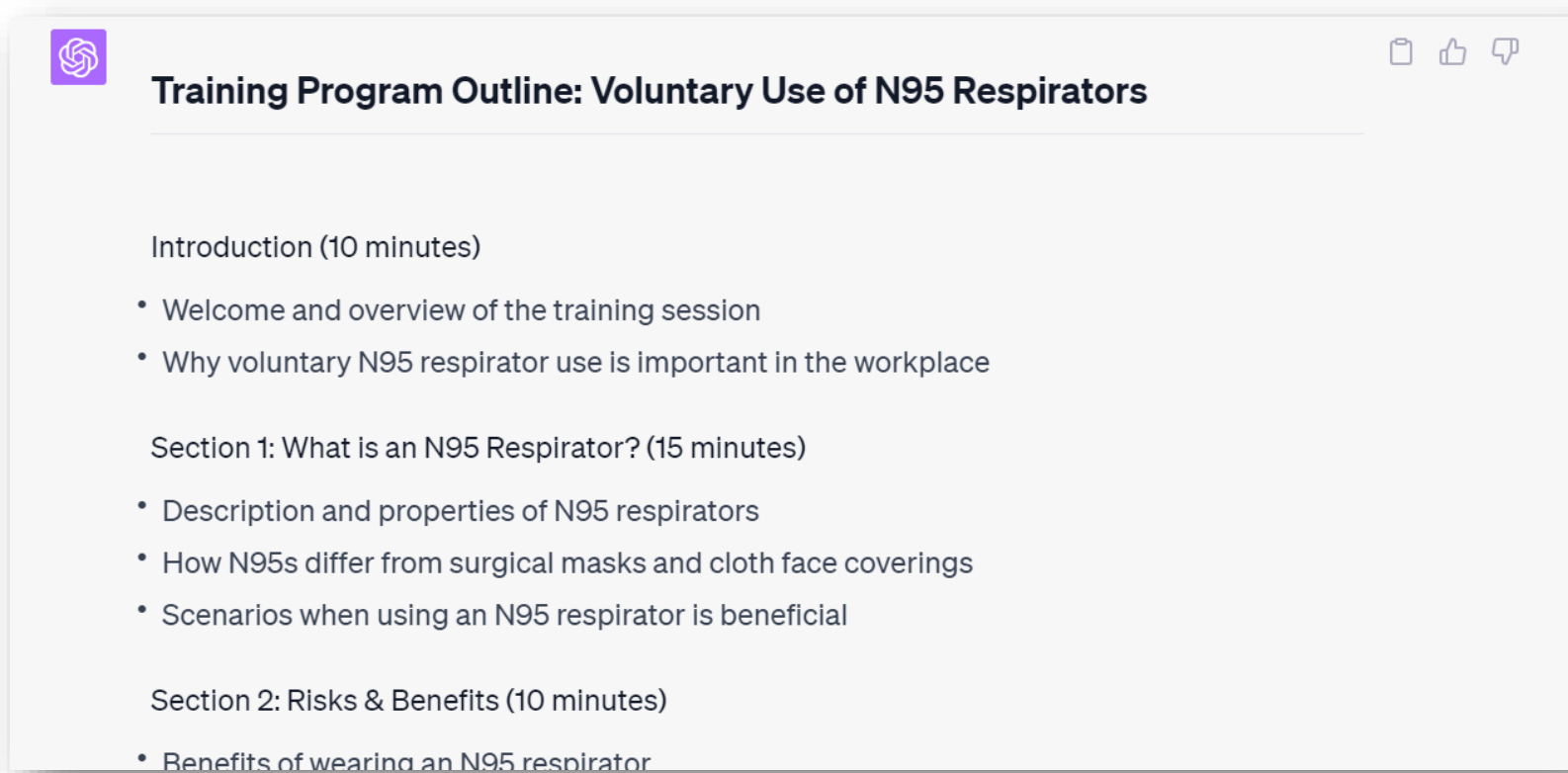
Cautionary tale
coming up in
the last section

Keeps going





...

Control - Training

“Outline a training program to educate workers on using N95 respirators under voluntary use”



The image shows a screenshot of a document titled "Training Program Outline: Voluntary Use of N95 Respirators". The document is structured with sections and bullet points. The first section is "Introduction (10 minutes)" with two bullet points: "Welcome and overview of the training session" and "Why voluntary N95 respirator use is important in the workplace". The second section is "Section 1: What is an N95 Respirator? (15 minutes)" with three bullet points: "Description and properties of N95 respirators", "How N95s differ from surgical masks and cloth face coverings", and "Scenarios when using an N95 respirator is beneficial". The third section is "Section 2: Risks & Benefits (10 minutes)" with one bullet point: "Benefits of wearing an N95 respirator". The document is displayed in a window with a purple icon in the top left and copy, like, and comment icons in the top right.

 **Training Program Outline: Voluntary Use of N95 Respirators**   

Introduction (10 minutes)

- Welcome and overview of the training session
- Why voluntary N95 respirator use is important in the workplace

Section 1: What is an N95 Respirator? (15 minutes)

- Description and properties of N95 respirators
- How N95s differ from surgical masks and cloth face coverings
- Scenarios when using an N95 respirator is beneficial

Section 2: Risks & Benefits (10 minutes)

- Benefits of wearing an N95 respirator

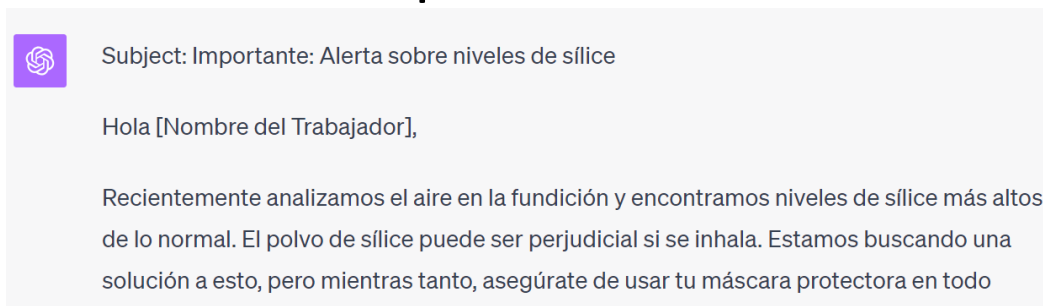
“Please expand on the selection of N95 respirators”

Control - Communicate Risk

- “Write an email to inform a foundry worker of high silica exposures”
 - Very detailed output; too much
- “Same but only 100 words and use plain language”



- “Please translate this to Spanish”



Other Useful Stuff

- “outline the **steps to qualitatively fit test a respirator** on a worker”
 - “define “how do I select appropriate test agent in the preparation step above”
- “prepare a **training program** for respirators in a foundry”
 - “translate the last prompt into powerpoint”
- “Please create a **health and safety plan** for L&T Welding Shop, which is in Iowa City. First, write how the business should deal with "Policy Statement: This is a declaration of the organization's commitment to health and safety. It sets out who is responsible for health and safety in the workplace and outlines the overall goals and objectives.”

Health and Safety Plan example

<https://www.youtube.com/watch?v=gSkuQ4P2GwU>

Generally Helpful Things

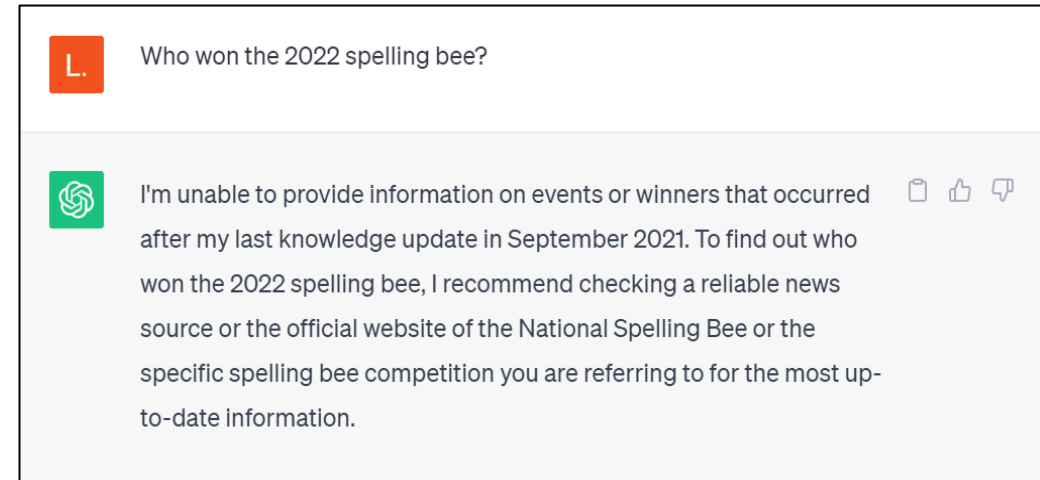
- Writing
 - Proofread, “Please edit the following paragraph for style and form”
 - Help me draft an email
 - The more detail you provide in your prompt the better.
- Summarize reports and meeting notes
 - “Give me the 5 main takeaways from this article. [copy of the article]”
 - “Below you’ll find the meeting transcript from a stakeholder meeting where [Company’s] CEO explained his vision for the next year. Please summarize the main points into a brief 200-word overview I can send out as an email to the rest of the company to inform employees about our strategic priorities. [Paste the meeting notes here]”
- Brainstorm
 - “I’m stuck on an article about ways how to use ChatGPT at work. Please give me some ideas to include in the article.”

So, What is the Problem?

- Accuracy
- Misinformation and disinformation
- Plagiarism
- Bias
- Privacy and Security

Accuracy

- Depends on complexity and specificity of the question asked
 - Effective prompting sets context for more accurate response
 - Accuracy improves with “training” and user feedback
- Cutoff date limits response
 - ChatGPT’s cutoff training data is Sept 2021
 - Output has nothing after that date



"ChatGPT sometimes writes plausible-sounding but incorrect or nonsensical answers" – Open AI

Accuracy: Hallucination

- Can create false quotes by real people
- May fabricate source names, direct quotations, citations, and other details
- Create authentic-looking citations including DOIs that do not exist or are inaccurate

Lawyer cites fake cases generated by ChatGPT in legal brief

The high-profile incident in a federal case highlights the need for lawyers to verify the legal insights generated by AI-powered tools.

Published May 30, 2023

L. Provide 5 scientific references for dermal exposure to lead



Certainly! Here are five scientific references that discuss dermal exposure to lead:

1. Title: "Dermal exposure to inorganic lead in the battery manufacturing industry."

Authors: Roels H, Lauwerys R, Buchet JP, et al.

Journal: British Journal of Industrial Medicine

Year: 1987

Does Not Exist

What can we do?

- Fact check
- Question everything

Misinformation & Disinformation

Misinformation – spread of false information, regardless of intent

Disinformation – false information used to deliberately mislead or create bias; manipulating narrative or facts; propaganda

- Chatbots can generate false information
- Reinforce existing beliefs or prejudices spreading confirmation bias
- Create misleading narratives

what are the occupational exposure limits for welding fume?

View other drafts ▼

The occupational exposure limit (OEL) for welding fume is 5 milligrams per cubic meter (mg/m³) as an 8-hour time-weighted average (TWA). This means that a worker should not be exposed to an average of more than 5 mg/m³ of welding fume over an 8-hour workday.

CAUTION!

- Which organization's OEL is it (PEL, REL, TLV or international)?
- Is size fraction a concern?

What can we do?

- Exercise critical thinking
- Fact check
- Promote media literacy
- Promote transparency and understand where the responses come from

Follow Up Question

L. where can I find the citation or source for the OSHA PEL for welding fume of 5 mg/m³

The OSHA PEL for welding fume of 5 mg/m³ can be found in the following document:

- 29 CFR 1910.1000, Occupational Safety and Health Standards, Subpart Z - Toxic and Hazardous Substances, Section 1910.1000(f)(11)(i) Fume. The employer shall ensure that no employee is exposed to an airborne concentration of welding fume in excess of an 8-hour time-weighted average (TWA) of 5 milligrams per cubic meter (mg/m³) as an aerosol of total dust."

You can find the full text of 29 CFR 1910.1000 on the OSHA website: <https://www.osha.gov/laws-regs/regulations/standardnumber>

The OSHA PEL is a legal requirement that employers must comply with. If an employer exposes an employee to welding fumes at a level that exceeds the PEL, the employer could be fined by OSHA.

It is important to note that the OSHA PEL is just one of many exposure limits that may be applicable to welding fumes. The specific PELs that apply will depend on the type of welding being done, the materials being welded, and the ventilation in the work area.

If you are exposed to welding fumes, it is important to take steps to protect yourself. These steps may include using personal protective equipment (PPE), such as a welding helmet with a face shield and filter cartridges, and working in a well-ventilated area. If you have any concerns about exposure to welding fumes, you should talk to your employer or a health care professional.

View other drafts



After fact checking:

- No 29 CFR 1910.1000(f)(11)(i)
- No limits for welding fumes
- ACGIH had proposed a TLV of 5 mg/m³ total particulates in the Notice of Intended Changes (NIC); however, it was withdrawn.
- OSHA had a PEL of 5 mg/m³ in 1989 for welding fume; however this PEL was vacated in 1992 by US Circuit Court of Appeals
- Other countries have set OELs for welding fumes ranging from 1-5 mg/m³ as total, respirable or inhalable fractions



Plagiarism

What can we do?

“Describe the operation of a bag house”

media. The dust falls into a hopper below the bags, where it can be collected and disposed of.

The frequency of cleaning the filter bags depends on the concentration of particulate matter in the air stream. In general, the more particulate matter in the air stream, the more frequently the filter bags need to be cleaned.

Baghouses are a common type of air pollution control device because they are relatively simple to operate and maintain. They are also effective at removing a wide range of particulate matter

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Spelling



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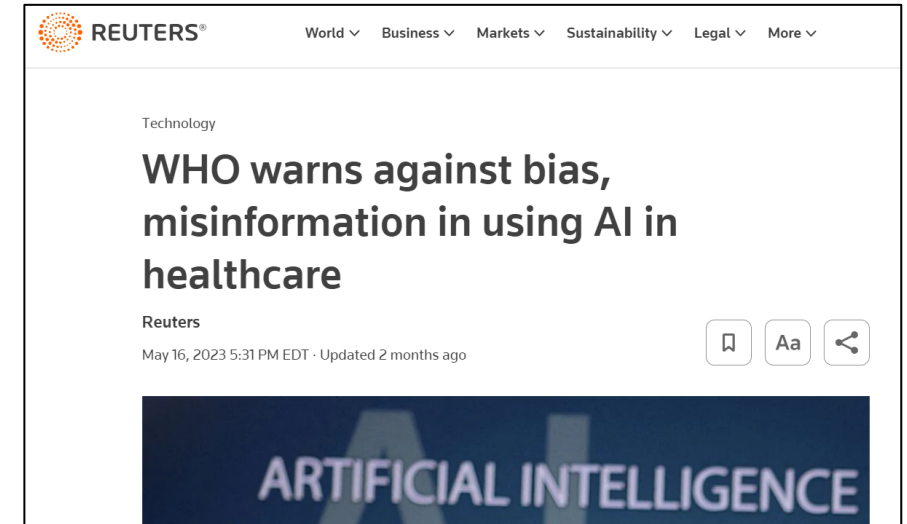
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- Combine multiple sources
- Avoid cutting and pasting AI-generated text directly into your work
- Disclose use of chatbots which maintains transparency and honesty
- Beware of and comply with institutions, organization, and publisher rules and guidelines when using AI-generated text to publish or produce content
- Use chatbots as an aid or supplementary tool; do not solely rely on it.

Bias

- Bias may result from training data
 - Societal
 - Stereotyping
 - Amplify biases
- Models not built to ethically interpret whether information generated is biased, false, misrepresented, or inappropriate
- Developers working to fix

[WHO warns against bias, misinformation in using AI in healthcare | Reuters](#)
[ChatGPT maker OpenAI promises to fix the chatbot's biases | Fortune](#)
[How should AI systems behave, and who should decide? \(openai.com\)](#)



What can we do?

- Be aware of potential bias when using Chatbots
- Report biased content to company
- Framing or re-phrasing your prompts
- Evaluate and fact check, use multiple sources
- Promote and advocate for ethical AI

Privacy

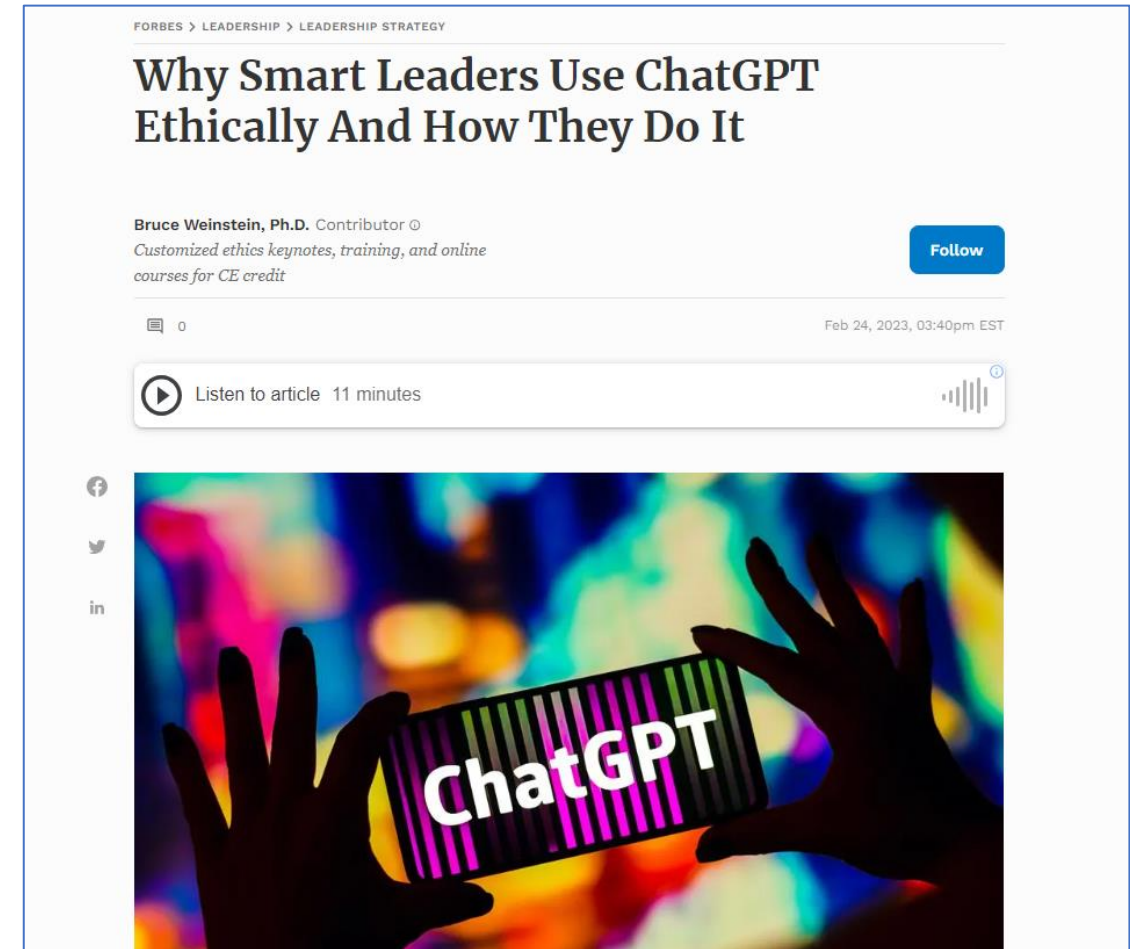
- Assume chatbots are not confidential and save conversations at company
- Be aware that chatbots
 - May generate responses that inadvertently reveal personal or sensitive information
 - Lack transparency on how data is collected and stored, and for how long
 - Save data that may be difficult to delete or retrieve

What can we do?

- Don't share personal or sensitive information with chatbots
- Review privacy policies of chatbot companies
- Don't save your Chat history
- Regularly clear browsing history and cookies
- Use private browsing and VPNs

Summary

- Chatbots are powerful tools that can help us do our jobs
- You must recognize that AI is still developing and has limitations
- I recommend use in low stakes applications and always with human oversight, treating responses as first drafts that require careful fact checking and rewriting



[Why Smart Leaders Use ChatGPT
Ethically And How They Do It
\(forbes.com\)](https://www.forbes.com/why-smart-leaders-use-chatgpt-ethically-and-how-they-do-it)