

► BUILDING CAPACITY



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Build Capacity With Generative Artificial Intelligence

Editor’s Note: A need exists within environmental health agencies to increase their capacity to perform in an environment of diminishing resources. With limited resources and increasing demands, we need to seek new approaches to the practice of environmental health. Acutely aware of these challenges, the *Journal* publishes the Building Capacity column to educate, reinforce, and build upon successes within the profession using technology to improve efficiency and extend the impact of environmental health agencies.

This column is authored by technical advisors of the National Environmental Health Association (NEHA) data and technology section, as well as guest authors. The conclusions of this column are those of the author(s) and do not necessarily represent the views of NEHA.

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If you track popular culture, you are already aware of ChatGPT, Google Bard, Bing Chat, Microsoft 365 Copilot, and their artificial intelligence (AI) cousins. Collectively, these tools are known as generative AI. Generative in the sense that they can generate content in response to prompts.

It is magical to those users who first encounter it. “You mean it can write poems, emails, quizzes, outlines, and news reports?” Yes!

Generative Artificial Intelligence

The public preview of ChatGPT crossed over into popular culture as we transitioned into 2023 and started to look at the COVID-19 pandemic through the rearview mirror. The technology will certainly launch 10,000 new

startups this year. As you read this column, thousands of organizations are implementing AI strategies—and your environmental health department should, too.

Chatbots like ChatGPT and Bing Chat are trained on large language models (LLMs). If pointed to Wikipedia, they ingest and organize what Wikipedia covers. If pointed to U.S. tax codes and regulations, they learn what the codes and regulations contain. And if pointed to your food code, marking guide, and transactions (e.g., permitting, licensing, inspections, emergency response), they can learn a lot about environmental public health and the operations of your department.

Microsoft 365 Copilot was recently announced, which is a promise to integrate

generative AI into its Office 365 suite, including Word, PowerPoint, and Teams. Google will soon make available a “magic wand” for its popular Google Docs.

Be aware that there are free and paid versions of most generative AI services. The paid versions feature extended capabilities, such as plug-ins and faster responses. Both are useful.

For just 5 minutes, let’s play and learn about ChatGPT:

- Point your browser to <https://chat.openai.com>.
- Click Sign-up and create an account.
- First, one for fun. In the Send a Message prompt, type the following:

Write a haiku about my black beta fish, Max.

- Click Send Message and we might get:

In dark depths he glides,
Max, the black beta fish thrives,
Beauty veiled, yet wise.

That was cute. To change to a more serious topic, click New Chat (top left). Chat sessions are like conversations. Click New Chat when you change topics.

- Type the following in the Send Message prompt:

I’m a new environmental health professional for my county. In just a few sentences, help me explain to friends what I do.

- Press Enter and watch for your personalized response. My response was:

As an environmental health professional, my role is to ensure the well-being of our community by assessing and addressing potential health risks in our environment. I work on issues such as air and water quality, food safety, and sanitation to protect public health and promote a healthier living environment for everyone.

The Regenerate Response button requests another, slightly different, answer. What you type in is known as a prompt. Try using different personas and entering different prompts. Remember to click New Chat (top left) when changing topics.

Limitations and Gotchas

Primarily, let us confirm that like internet searches, generative AI sessions can be monitored by your employer, your internet service provider, and AI companies. You should not share with a chatbot any more than you are willing to share with a stranger.

Be aware that prompts and responses are not private. In fact, the model learns from its previous interactions.

AI services sometimes get it wrong. In the world of AI, response misfires are referred to as “hallucinations.” These cases are where the model responds incorrectly (yet with authority). I have seen examples where the chatbot invented website URLs and names that did not exist. This instance is why responses should be validated as accurate.

Although generally safe, it is possible for prompts and responses to violate your personal and department standards for respect and kindness. Do not rely on these tools blindly. They can (and do) sometimes misrepresent facts.

As you become more experienced in working with generative AI, you may start to create larger and larger prompts. Note that each model has limits to how much text it can accept for each prompt. So, asking it to summarize a new policy (copied and pasted into the prompt) might work fine but asking it to summarize the entire employee handbook might fail. Just break it into smaller parts.

Finally, be aware that these models were trained as of a specific date. Unlike traditional internet searches, questions about recent events will either be deferred or answered incorrectly. Considering the limitations and newness of generative AI, it is a great idea to check for any policies from your organization or department on its use. I have included a sample policy at the end of this column.

Carefully consider both the benefits and risks as you explore how to leverage this technology. If training is not currently available, advocate for it and get involved in establishing a policy to frame its use.

Three Prompts for Three Environmental Health Personas

With the knowledge of AI's limitations, you and your colleagues should still benefit by accessing the tools, which can save your time and energy for more compelling tasks. Try these prompts. Remember, if you do not like the response, you can add a follow-up command (e.g., make it shorter or generate as a table), click regenerate, or design your own prompts.

For the Trainer

Prompt 1: Generate a 20-minute presentation outline on the topic of fats, oils, and greases (FOGs). The presentation audience is the local rotary club. Use a voice that is authoritative but also relaxed and fun.

Prompt 2: Generate a 10-question multiple choice quiz on the training materials below. Each question should have five possible responses. Finally, create an answer key with only the correct answers. [Paste your training materials here before you hit send].

Prompt 3: Write a fun email inviting staff to attend this week's Lunch and Learn. The event is Friday at noon in the training room. This week's topic is "Mastering the Art of Mosquito Breed Identification" and the presenter is Dr. Martinez.

For the Inspector

Prompt 1: You are an inspector for an environmental health department. Your primary focus is on protecting the public's health. Your second focus is on education. Rewrite the following inspection comment to be compelling to a restaurant operator.

[Paste your inspection comment here before you hit send.]

Prompt 2: According to the 2017 Food Code, help me explain the relationship between time and temperature in food safety. Summarize it in a way that is understandable and relatable to all readers.

Prompt 3: You are an inspector for an environmental health department. Annually, our state environmental health association provides a 3-day educational conference. Help me write a short email to my manager with a compelling case for allowing me to attend this year.

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Three Prompts for Three Environmental Health Personas *continued from page 27*

For Supervisors, Managers, and Directors

Prompt 1: You are the director of an environmental health department. Your department is about to adopt a 4-day work week for a 3-month trial period. Write a memo to staff explaining the pilot and inviting employees to opt in or out. Explain that at the end of the trial period, the department will assess the results and consider a permanent policy.

Prompt 2: You are the director of an environmental health department. You must make a report to the board of supervisors itemizing the expected impact of new regulation that decriminalizes unlicensed food vendors. Draft a presentation outline. The new regulation is shown below. [Paste regulations here before you hit send.]

Prompt 3: You are the director of environmental health for your county. You use a data management system that captures facilities, permits, fees, inspection results, complaints, etc. Faced with budget pressures, what types of reports should I request to help me analyze my entire organization? Give your top five recommendations in a table with the report title and the report description for each.

Sample Policy for Environmental Health Departments on the Use of Generative Artificial Intelligence

Purpose and Scope: This policy sets guidelines for the appropriate use of generative artificial intelligence (AI) chatbots such as ChatGPT, GPT-4, Bing Chat, Google Bard, etc. This policy applies to employees using department equipment and networks.

Authorized Use: Employees may use generative AI for work-related tasks. The use of chatbots for personal reasons is discouraged and is covered by the existing internet acceptable use policy of the department.

Reducing Bias and Harm: Generative AI can reflect cultural, social, and other biases. Employees must review content to avoid unintended biases and harmful or offensive material.

Security and Privacy: Employees must ensure that the use of generative AI does not compromise the security or privacy of department information. All communications using generative AI must be in compliance with applicable laws and regulations.

Compliance With Department Policies: Employees must comply with all department policies, procedures, and guidelines related to the use of technology and communication tools.

Monitoring and Enforcement: The department reserves the right to monitor the use of generative AI on department-owned equipment or networks to ensure compliance with this policy. Violations of this policy may result in disciplinary action.

Public Records: Employee use of generative AI systems may result in the creation of a public record.

Training and Education: The department will provide training and education on the appropriate use of generative AI to interested employees.

Disclaimers: The department makes no warranties, express or implied, with respect to the use of generative AI on department-owned equipment or networks and disclaims any liability for any damages arising from such use. By using generative AI on department-owned equipment or networks, employees agree to comply with this policy and acknowledge that any violation of this policy may result in disciplinary action. ✨

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Did You Know?

The 2024 Integrated Foodborne Outbreak Response and Management (InFORM) Conference will be held in Washington, DC, on January 22–24, 2024. The InFORM Conference brings together the network of public health officials involved with foodborne and enteric disease outbreak response, including current federal, state, and local public health and environmental health specialists; epidemiologists; health communicators; and laboratory scientists. Abstract submission notifications will go out in mid-September. The submission for late-breaker abstracts will run from October 2–16. Registration will open no later than October 6. Stay tuned to www.neha.org/inform for the latest information regarding registration, the agenda, and award nominations.