Could PFAS exposure impact your response to COVID-19?

Per- and polyfluoroalkyl substances (PFAS) are a group of more than 9000 specific, human-made chemicals. PFAS have unique properties that make them useful in a range of products and applications. For example, PFAS are used in furniture and clothing to make them stain- and water-resistant.

Researchers have only studied relatively a small portion of the over 9000 known PFAS. Well-studied PFAS—like PFOA and PFOS—are linked to multiple health effects including high cholesterol, liver damage, developmental toxicity, and certain cancers.

PFAS that have been studied are also known to be immunotoxic, meaning they negatively impact the immune system. The immune system protects against diseases including viruses like COVID-19.

Exposure to PFAS can decrease the immune system's ability to create antibodies, which help fight diseases like viruses. Both human and animal studies have demonstrated that PFAS impact the immune system's ability to make antibodies.

A decreased ability to make antibodies can cause a decreased response to a vaccine. In one health study, infants exposed to higher levels of PFAS had lower responses to common vaccines that they received during childhood. Health studies have also demonstrated that adults exposed to PFAS had lower responses to the flu vaccine.

One specific PFAS, known as PFBA, has been reported to accumulate in the lungs at a higher level than other PFAS. A recent study found a relationship between PFBA levels in blood and the severity of COVID-19 illness.

Since COVID-19 is a new disease, very few studies have looked into the relationship between COVID-19 and PFAS exposure. Nonetheless, current research demonstrates that PFAS have the ability to impact the immune system, a critical organ system for fighting diseases like COVID-19.

Communities impacted by PFAS are rightfully concerned about how their PFAS exposure might impact both their response to COVID-19 and COVID-19 vaccines. PFAS are unregulated at the federal level in the United States. PFAS also persist in the human body for long periods of time and we do not fully understand the health impacts of exposure to multiple PFAS at a time, which is how most people are exposed. Additional research is needed to fully understand how PFAS exposure plays a role in COVID-19 illness and vaccines.

Sources:

1. EPA PFAS Master List
2. ATSDR Potential health effects of PFAS chemicals
3. PFAS Exposure in Infancy Linked to Reduced Vaccine Response
4. Influenza Vaccine Response in Adults Exposed to PFOA and PFOS
5. Severity of COVID-19 at elevated exposure to perfluorinated alkylates
6. Op-ed: PFAS chemicals—the other immune system threat

Visit www.cdc.gov for more information on COVID-19 and vaccinations.

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