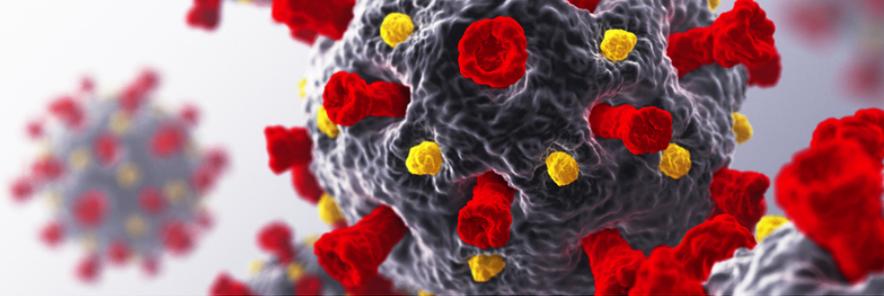


# FACTsheet

## Toxics and Vaccine Effectiveness



### Studies Linking Reduced Vaccine Effectiveness with Exposure to “Forever” Chemicals

#### Summary

Vaccines depend on a strong healthy immune system in order to be effective. Recent research has demonstrated that exposure to toxic “forever” chemicals called PFAS can reduce antibody production, an important part of an effective vaccine.

**Choosing PFAS-free products is one way to reduce exposure.**

The coronavirus pandemic has prompted an enormous global effort to create effective vaccines for the disease. According to the World Health Organization, there are currently over a hundred vaccines under development.<sup>1</sup>

In our bodies, vaccines imitate an infection. Typically this causes the production of white blood cells, some of which go on to produce antibodies to the imitation infection. Once that infection goes away, the white blood cells stay in the body, ready to fight the real disease in the future.<sup>2</sup>

#### What Do We Know About PFAS and Vaccines?

Researchers studying “forever” chemicals (PFAS) have shown that this class of chemicals has the ability to reduce the effectiveness of vaccines:

- In a group of Ohio and West Virginia residents whose drinking water was contaminated with PFAS, study participants with high blood PFAS levels produced low levels of flu antibodies.<sup>3</sup>
- In a group of mothers and children in two Norwegian cities, children whose mothers had high levels of PFAS produced low levels of rubella antibodies.<sup>4</sup>
- In a small exploratory study of 12 volunteers, participants with high levels of PFAS produced tetanus and diphtheria antibodies slowly after booster vaccinations.<sup>5</sup>
- In children on the Faroe Islands, blood PFAS levels in infancy (3 -6 months) were linked with low diphtheria and tetanus antibody production.<sup>6</sup>
- Two PFAS chemicals are “presumed to be an immune hazard to humans” according to the National Toxicology Program.<sup>7</sup>

Clearly, scientists have not yet had the opportunity to study the link between PFAS exposure and antibody response to a coronavirus vaccine, but these studies, while small, point to a troubling link.



## Conclusion

Available evidence indicates that reducing exposure to PFAS could help to make sure that coronavirus vaccines are as effective as possible.

PFAS are such widely used chemicals that there are many ways to reduce exposure. CEH can help you to reduce potential exposures by identifying PFAS-free disposable foodware, furniture, and carpets.

**Researchers studying “forever” chemicals (PFAS) have shown that this class of chemicals has the ability to reduce the effectiveness of vaccines**

## References

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