

VDH INTERNSHIP ACADEMY 2023



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 B.S. Neuroscience
 Global Health Certificate
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Environmental Health



Prince William Health District

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PROJECTS COMPLETED

Developed a PFAS brochure for use in PWHD:

What are PFAS?

- PFAS (per- and polyfluoroalkyl substances) are man-made chemicals that have been used in many industrial and consumer products since the 1940s.
- Since PFAS are widely used, they can be found in the water, soil, air, and many consumer goods.
- PFDA (perfluorooctanoic acid) and PFOS (perfluorooctane sulfonic acid) are the two most common types of PFAS in the United States.
- PFAS are often found in:
 - carpet
 - fabric
 - firefighting foams
 - non-stick coating on cookware and food packaging
- PFAS take a long time to break down in the environment.
- Understanding of PFAS continues to change as new data emerges.

Resources

Taking charge of your health means staying informed!

PFAS in general:

- Detailed information about PFAS in Virginia can be found here.
- Use ODW's PFAS Tracking tool find out what the PFAS levels look like in your area.
- See VDH's toxicology site about PFAS.

PFAS in private wells:

- Find out more about PFAS in Virginia well water on VDH's website.
- A list of EPA-approved laboratories may be accessed here.

Federal Agencies & PFAS:

- Learn more about PFAS on the EPA's website.
- Visit the CDC's website to learn about PFAS exposure in humans.

Exposure to PFAS

- The most common route of exposure to PFAS is consumption of contaminated food and water:
 - Drinking contaminated water
 - Eating fish from contaminated water
 - Eating food grown near areas with high levels of PFAS
 - Eating foods prepared in packaging made with PFAS
- Living near factories or working in jobs that make PFAS may increase amounts in the blood.
- Levels of PFAS in bottled water are not monitored by the FDA, so drinking from them is not necessarily a safe alternative.
- Get the most updated information in the resources tab.

Potential Health Effects

- The full range of health effects caused by PFAS is still being studied.
- Current research indicates that exposure to high levels of PFAS may be linked to:
 - Increased cholesterol levels
 - Changes in liver enzymes
 - Decreased vaccine response in children
 - Greater risk of high blood pressure or pre-eclampsia among pregnant women
 - Small decreases in birth weight in infants
 - Kidney and testicular cancer
- Health outcomes are dependent on many factors that are still being studied.

What is Virginia Doing about PFAS?

- The Virginia Office of Drinking Water (ODW) is currently in Phase 2 of the sampling program to measure PFAS in Virginia's water supply.
- ODW is working with utility providers to monitor PFAS within public drinking water supply.
- If you are one of the 1.6 million Virginians that rely on a private well, it is your responsibility to test your water.
- VDH does not test for PFAS in private wells, nor do they require anyone to test for it.
- If you live in an area that is known to have high levels of PFAS, it may be wise to consider having your water tested.
- Please note, private well testing for PFAS can be difficult and costly.

Private Wells

Always talk to your doctor about your health concerns.

PFAS (also called 'forever chemicals') are a big topic in environmental health right now. Given the unknowns of PFAS, I wanted to create a brochure to educate the public about basic information about PFAS and point the public to resources to learn more. Thank you to Dr. Dwight Flammia, Toxicologist and Emely Melendez, PWHD Population Health Community Coordinator for reviewing the brochure.

Created an Environmental Health and Maternal & Child Health Toolkit:

In collaboration with VDH Academy Intern, Allison Hoang, we created an 85 page toolkit. Our goal with this project was to promote health education regarding environmental hazards, climate change in relation to maternal and child health.

THE ENVIRONMENTAL & MATERNAL + CHILD HEALTH TOOLKIT

PROTECT THE HEALTH OF YOU AND THOSE YOU CALL FAMILY

EH & MCH TOOLKIT

The goal of the *EH & MCH Toolkit* is to highlight common environmental threats to maternal and child health. Covering both physical and behavioral EH risks, the toolkit identifies direct sources of exposure, discusses dangerous health consequences for women and infants, and provides tips for prevention and resources. The toolkit aims to raise awareness through evidence-based information and serves as an educational guide to improve MCH well-being and development.

THE INTERSECTION BETWEEN EH & MCH

Our day-to-day environment contains many potential hazards and threats that may harm human health. While these dangers can harm any part of the population, certain groups are more likely to experience higher rates of disease and injury. This is the case with pregnant mothers and children, due to their vulnerable status.

Climate change continues to threaten the world around us, making it vital to address these environmental hazards within the community as early as possible. Knowing the risk behaviors, promoting prevention, and emphasizing good public health practices can promote long-term health of mothers and infants. In turn, we can improve the health of the entire population.

TYPES OF EH ISSUES

PHYSICAL ENVIRONMENT		SOCIAL ENVIRONMENT	
THE DIFFERENCE			
The environment that physically surrounds a person and includes tangible elements and structures. Physical, chemical, biological, or radiological agents.		The social setting made up of a person's behaviors, beliefs, customs, and practices. Relationship dynamics, personal lifestyle habits, or social status.	
TABLE OF CONTENTS			
CHEMICAL EXPOSURES	COMMUNITY & RELATIONSHIPS		
Air Pollution..... 10	Family Size..... 41		
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CLIMATE CHANGE			
Emissions & Greenhouse Gases..... 28			
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PARTICULATE MATTER

Particulate matter (PM) are tiny pieces of solids or liquids within the air, such as dust, dirt, soot, or smoke that can be harmful to human health. Particulate matter varies in size, and can be small or large.

Small particulate matter is known as 'PM2.5' and is considered hazardous as their size makes it easier to enter the lungs and bloodstream. Tobacco smoke is a common type of small particulate matter.

Large particulate matter is known as 'PM10' and can be irritating to the eyes, nose, and throat. Dust is a common type of large particulate matter.

MATERNAL & CHILD HEALTH IMPACTS

Air pollution exposure during pregnancy can have severe health consequences for pregnant people and their children:

- Increase risk of pre-term delivery and stillbirth
- Higher risk that baby will have low birth weight
- More likely to develop heart defects
- Greater risk of miscarriage
- Increase the occurrence of asthma
- Cause bronchitis and lung damage
- Impair brain development, cardiovascular and immune systems

DAILY ACTIVITIES

INSPECTIONS

- Assisted with inspections for private wells, marinas, swimming pools, restaurants, and hotels throughout the county

INVESTIGATIONS

- Collaborated with other county departments, including building, zoning, and code enforcement to follow up on complaints for septic tanks and health & safety menace complaints
- Foodborne illnesses investigations

RABIES PROGRAM

- Quarantine checks and site visits
- Reviewed bite reports
- Packed specimens for lab testing

SKILLS LEARNED

- Beginner and intermediate/advanced excel training through VDH
- Beginner and intermediate SQL through DataCamp via VDH
- Creating health education materials
- Health promotion
- Cross-department collaboration



Allison H. & I helped the EH Associate in PWHD pack rabies specimens.



LESSONS LEARNED

- Creating health education materials that can be understood by the public can be challenging, especially when dealing with scientific topics
- Environmental health plays a huge preventative role in many diseases. Ensuring EH departments are well-staffed is important to promoting the safety and health of the public
- Bureaucracy is a regular process that local health departments have to navigate

FUTURE GOALS

- The VDH Internship Academy experience solidified my desire to pursue a career in the field of public health
- I am actively searching for employment opportunities in public health/environmental health within the Northern Virginia and Washington D.C. area
- I plan to apply to MPH programs to start in Fall 2024

SPECIAL THANKS

I would like to extend my thanks to Jeff Stover and Sam Walmsley for creating an amazing internship experience. I also would like to thank both Patrick Jones and Patrick Berard Jr. for mentoring me during these 10 weeks. And finally, thank you to the entire team at PWHD! I have learned so much and hope to be back at VDH soon.