

IDENTIFYING RISK FACTORS REGARDING PHTHALATE EXPOSURE

by Hannah Warren



Denise Chavez Reyes currently holds a bachelor's degree in Human Services and a master's degree in Technology with a concentration in entrepreneurial leadership; both degrees were awarded by East Tennessee State University. While pursuing her first master's degree she was hired as a research assistant by Dr. Mildred Maisonet from ETSU's Department of Public Health to conduct research, which required a Spanish-speaking interviewer. While studying in a bilingual high school in Ecuador, she met a math teacher from East Tennessee who was teaching at her high school and encouraged her to apply to ETSU.

Prior to changing her major to Human Services, she was studying corporate finance and investment, a field that can sometimes describe human beings as a "cost" of business rather than assets to business. As a requirement to be accepted into the MS in technology program, Denise needed to fulfill a thesis requirement. She wanted to understand the factors that influenced Hispanic participation in higher education, and learn how to get more individuals from Hispanic backgrounds involved in higher education. In need of a bilingual Spanish-speaking research assistant who could interact and engage with the Hispanic community for a project, Dr. Maisonet reached out to Denise, who at that moment was about to defend her thesis, to be a research assistant.

When Denise started to work for Dr. Maisonet to collect interview data, she found her niche and learned that some of the factors studied in her research were also determinants of health outcomes. She decided to pursue a second master's degree in Public Health. Dr. Maisonet's research focuses on chemical exposure and hormone levels in women. Specifically phthalate levels in a female Hispanic sample. Phthalates are a class of man-made chemicals found in many household cleaners. As potential endocrine disruptors, they compete for binding sites on receptors within

the body that human hormones would normally bind to, and may interfere with body processes such as cognitive development, growth, metabolism and reproduction. The two hypothesize that women in certain occupations may be at risk of higher exposure to phthalates than others. If they are able to confirm this, they can work to create community education programs to educate workers on ways to minimize their exposure to phthalates in order to promote better health.

To begin the project, Denise read about phthalates, how they interfered with hormone binding mechanisms in humans and created a modified translation of study-specific questions from the US National Health and Nutrition Examination Survey (NHANES) created by the Center for Disease Control and Prevention. Denise first visited Hispanic communities in Erwin, Greeneville, Kingsport, and Johnson City to talk with potential volunteers about the importance of the study she was hoping to



Left, Denise Chavez, Right, Dr. Mildred Maisonet

conduct. After she had recruited enough people who were interested in participation, she conducted interviews to gather background information to verify that they met study inclusion criteria of being a female over the age of eighteen. She provided education on how to collect their biological specimens, and provided all supplies required for collection. Because phthalate metabolites are detectable in human urine, urine samples - both easy to collect and relatively inexpensive to process - served as the method of data collection for this study. Once participants had collected their biospecimen Denise sent them to colleagues of Dr. Maisonet at the University of Tennessee at Chattanooga for analysis. Due to funding limitations, the project was capped at 50 participants, despite receiving interest from more than 50 women. At this time, Dr. Maisonet and Denise are awaiting results from the urinalysis of phthalate levels from each of the specimens, which will be compared to the National average to confirm or deny their initial hypothesis. If their hypothesis is confirmed, she and Dr. Maisonet plan to use results from this research as pilot data to gain support for a larger project.

Denise's devotion to helping others extends far beyond this single project. Since her arrival in Johnson City, she has always been engaged with the community and an advocate for the area's Hispanic community. The Migrant Education Program organized by Conexión Americas in Tennessee, is a summer camp that brings children from families that work in agriculture to various campuses across the Tennessee where they learn about various topics. This summer the focus was on building



Denise Chavez (center), Friends Committee on National Legislation in D.C.

confidence and leadership in students in order for them to successfully identify and follow their dreams.

Another project that Denise and Dr. Maisonet spearhead is education on the importance of advocacy to ETSU students. In March, Denise, Dr. Maisonet and Dr. Fiuza traveled with nine ETSU students to Washington D.C. to be trained on the lobbying process for immigration policy change and border security options through the Friends Committee on National Legislation (FCNL), a Quaker organization that promotes non-confrontational, non-partisan lobbying by focusing on establishing long-term relations with elected officials. While in Washington the group was able to meet with several local politicians including Phil Roe, Lamar Alexander, and Marsha Blackburn where they were able to have conversations about current issues surrounding the rights of immigrants to America and advocate for the humane handling of immigration issues. This year the FCNL's focus is on carbon pricing, and Denise will act as delegation

leader and representative for ETSU. In addition to representatives of FCNL visiting ETSU, a group is preparing to attend another training session, which will take place in D.C. in March.

After graduation Denise plans to take time to gain work experience before applying to a doctoral program in public health. She finds joy in being able to integrate each piece of her education, in some manner, into the work she currently does, inspired by the concepts of grit and hardiness. Being in leadership, having a multifaceted perspective regarding public health, and acting as a role model, both the students and community members she works with have taught her resilience, and serve as a reminder that even though she may face adversities within her own research, the outcome is worth persevering for. She has been able to form lasting connections in the community and created a strong network that will continue to foster her work both here in Johnson City and wherever her future takes her next. ■