

Yoira Díaz-Sanabria: from environmental engineering to nuclear energy ^[1]

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Engineer Yaira Díaz-Sanabria

Engineer Yaira Díaz Sanabria was always attracted to science, especially biology and chemistry. “My mother was a biology teacher and science is in my blood”. She considered going into medicine or medical technology, but at the time to decide for college she chose to study chemical engineering.

Yaira is originally from Las Piedras ^[4], the city of artisans. She was raised and attended school in eastern Puerto Rico. When the time for college came around, based on her decision to pursue engineering, her parents did not hesitate to send her to University of Puerto Mayagüez ^[5], where they knew she would receive the best education.

While Yaira studied chemical engineering, she also took courses in environmental engineering and completed the certificate offered by the university in this subject. She always knew that she would pursue graduate studies, and that very likely they would be in environmental engineering. This is a very flexible career that encompasses design, planning, and commercialization. Yaira also felt that this field of engineering would allow her to apply her interest for administration and resource optimization.

In her last year of college in Mayagüez, Yaira attended the job fair hosted by the university. She thought that being a chemical engineer, she most certainly would work in the pharmaceutical, oil or manufacturing industry. However, it was at this job fair that she first heard about the Nuclear Regulatory Commission ^[6] (NRC), the opportunities offered by the agency, and where she met Luis Reyes, a Mayagüez alumn and a NRC executive.

The day after the job fair, Yaira was interviewed by Luis and learned that the NRC is an independent regulatory agency, whose purpose is to ensure that nuclear material used for commercial and medical purposes is managed and transported safely.

In the United States, nuclear material is used for medical, academic, scientific, and industrial purposes, as well as for electricity generation. For example, in hospitals nuclear material is used for the treatment of cancer patients through nuclear medicine. Nuclear material also has multiple applications in research, and among its many uses, it is used to determine how substances are metabolized in the body or to measure soil density. The mission of the NRC is to protect the public and the environment by performing safety evaluations, issuing licenses, conducting inspections, and enforcing the laws and requirements established by federal regulations.



A few weeks after her interview with the agency in Mayagüez, Yoira was invited to the agency headquarters in Rockville, Maryland. While visiting, she had the opportunity to talk about the agency with employees. She was pleasantly surprised to find that most employees had been working with the agency for more than 15 years. When she asked why they worked at the agency for so long, they all conceded that “the mission of the NRC is of utmost importance and our job is directly related to maintaining that mission”. For Yoira, feeling part of a mission and having a set purpose, were the main reasons that led her to work at the agency.

Yoira started at the NRC as an intern in the Nuclear Safety Professional Development Program, an internship of two years created by the agency to provide new employees with the necessary skills. During these two years, Yoira learned about nuclear engineering, the operation and function of nuclear plants, and the fabrication, transportation and handling of uranium. This developmental program also allowed her to practice her new skills by working in various assignments as a systems engineer, amending licenses, and performing inspections at different nuclear plants.

When the internship ended, Yoira joined the division of license renewal where she had the opportunity to manage the Browns Ferry nuclear plant ^[7] project. In the United States, nuclear plants are licensed to operate for 40 years. Before this period of time ends, plants that wish to renew their licenses must submit an application to the NRC for review. A renewal application takes a minimum of two years, and during this time both engineering and environmental impact re-evaluations are performed. This process also has a public component in which the community is encouraged to submit their petitions to intervene or provide their comments during public forums.



- NRC Regulatory Oversight**
- > NRC's Governing Statutes
 - Atomic Energy Act
 - National Environmental Policy Act (NEPA)
 - > NRC's Mission
 - Protect Public Health and Safety
 - Promote Common Defense and Security
 - Protect Environment

After taking over the management of the Browns Ferry project, Yoira decided to obtain her master's degree in environmental engineering at [Johns Hopkins University](#) [8]. By balancing her workload with school, Yoira was able to successfully complete her degree in two and a half years. While obtaining her masters, Yoira took courses in air quality, water and underground pollution, and she also learned about project management.

Yoira spent three years in the license renewal position, and then obtained a promotion to a high leadership position. This new position allowed her to be selected for a leadership development program offered by the agency, opening the door to a branch chief position. During the year of the leadership program, Yoira served as a supervisor in two offices. A few months later, she became a [Branch Chief in the License Renewal Division](#) [9], a post she still occupies today.



Reflecting on her 13 years at the NRC, Yoira, just like the now colleagues with whom she spoke in her first visit to the agency, carries the mission of protecting the public and the environment with a lot of pride. What she enjoys most about her job is that she can collaborate with different people, having different points of view about the same technical field, and that she can motivate and provide support to promote her team's professional development.

Another part of her job that she is passionate about is being a mentor for the group [Latinas Leading Tomorrow](#) [10], a program that promotes the growth of latin girls residing in the Montgomery county area, where Yoira lives. Yoira encourages young people interested in engineering to pursue this field of study. "Engineering covers a diversity of fields and it is a practical career. As the saying goes a career in engineering is a good buy. It offers a wide variety of applications".

If you want to know more about engineer Yoira Díaz-Sanabria visit her [profile](#) [11] at [CienciaPR](#) [12].

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