

## Career Series

*Interview with Dr. Dan Costa, a National Program Director for the EPA*

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*Dr. Dan Costa is the National Program Director for the Air, Climate, and Energy Research Program in the Office of Research and Development of the Environmental Protection Agency. Dr. Costa received his Master's from Rutgers University, his Sc.D. from the Harvard School of Public Health, and completed a postdoc and 5 years as a staff scientist at Brookhaven National Laboratory before working for the EPA.*

### Basic job description:

I am the National Program Director for the Air, Climate, and Energy Research Program, which is a part of the Office of Research and Development in the Environmental Protection Agency. The Office of Research and Development makes up about 10% of the EPA's overall personnel and resource structure. It's the scientific research arm of the EPA, and its purpose is to support policy and decision making, including decisions involving the development and evaluation of controlled technologies, and inform public health policies. My program specifically focuses on air quality, climate change, and energy as well as their interplay; the EPA's interest in energy involves strategies for making appropriate choices in energy.

### Type of education/training required:

I never received any training specifically for a management position, because had I looked at my future through a crystal ball 30 years ago, I'd not have imagined that I'd expand the nature of work particularly to encompass the management of large and diverse research program in both health and physical sciences. My graduate research was in air pollution and its impact on the physiology of lungs. What I've learned through my career trek is that while it's really important to consider every opportunity as it comes by, it is equally if not more important to create your own opportunities. I got into a management position at the EPA because I started to realize that being in management meant that I could have a broader impact than I would by staying in the lab fulltime. Finding the balance of science and management that suited me and my overall goals for the program has been perhaps one of my greatest career challenges.

### Special talents or skills that contribute to career:

I'd say that in this career, it's important to keep an open mind and have an internal gyroscope. Keep a balance. You're dealing with everyone from scientists working in

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a lab with a narrow focus to bureaucrats who may not be familiar with research. You want to strike a balance and find avenues to communicate, so it's important to work towards a program mission that is about "us," not "me" or "them." Keeping in mind that you are dealing with such a diverse group of people, communication is probably the biggest thing. It's also very effective to "kill people with kindness," be reasonably patient and tolerant, and to think positively. When you do that, people are responsive and once you earn their trust they can be very productive.

### **Average income range for people working in your area (entry level through experienced persons):**

An incoming EPA scientist is Government Service (GS) Level 12, which is around \$60,000 a year. Management positions get as high as GS Level 15, which is \$150,000-\$160,000. Under Title 42, it does allow the EPA to pay a salary that is more competitive with the outside world, which allows them to attract academics. That can go as high as \$250,000 for a truly unique individual. There are locality adjustments and of course (when the economy is ok), cost of living adjustments.

### **What is involved in a typical workday?**

I have a small staff of people that are working with me, for instance I have a deputy, an associate for climate, and an associate that works with the labs in implementing specific program plans and their coordination. I don't direct one of ORD's Labs, I direct a program that interacts with the Labs to get the EPA research mission translated into actual research activities. The Lab side looks to me to get their funding and direction so they can do the work they want to do to meet the program expectations. We have internal and extramural reviews as well as oversight reviews by a Science Advisory Board comprised of academics and a few high level private sector scientists.

To start off a typical day, my office assistant gives me my calendar, and I check my email to see if anything is hot from the Lab folks. I then check into any urgent matters. I spend about three hours a day in various meetings, usually about program planning, execution, and review. There are twenty four project areas within my program, and those are supposed to lead to products and outcomes that the office supports; for instance, developing methods for implementation of a standard, or some basic health effects research needed for a Clean Air Act standard review, or an air quality or exposure model that supports risk estimates underlying the next decision. I

spend an hour or so on the "real" science, including reading papers, checking up on Sigma Xi notices, and taking phone calls having to do with questions from regional or program offices, other scientists in EPA (or outside) or questions from the public. I

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also confer with my laboratory science colleagues who have taken over the day to day science I cut my teeth on. This gives me some stability in my day in its inherent logical core.

Of course, there is a certain amount of spontaneity and urgency that comes out of D.C. A Congressman wants to know a budget detail or statistic, so we rush to compile the data and get it back to him or her. I spend two-three hours a week meeting with people in Research Triangle Park [RTP, where the office is located] to address their “worry list.” As I can, I work on a student’s paper (often it flows into the evening) or a technician or associate from my program will bring me some data from time to time that needs some discussion. And I try to meet with two or three investigators per month so I know what is going on in the trenches. This latter activity keeps me grounded and helps me with gaining trust and confidence from the people who I support from a management perspective. I believe the power of these interactions is often lost on managers who have so-called more important or urgent issues to deal with.

### **What do you like the best about your work? The least?**

The best thing about my job is that it allows me to use virtually everything I’ve learned over the course of my career. Everything that I do is a synthesis and response. Had I been at this job twenty-five years ago, I’d have nervous ticks and high blood pressure, but at this point with my experiences and I suppose maturity (both from work and from raising a family) most crises and hassles don’t really bother me. I interact with a lot of bright and energetic people, and I try to instill in them that our work is a team effort and we work together pulling our ends together. It’s satisfying to see young people moving up in their careers with great passion; I love seeing them grab the ball and run with it. I have a few postdocs and students, I have externs, and I find these folks invigorating.

On a personal note, I have five kids, and they all played sports and were involved in lots of activities. With the positions I’ve held at EPA, I could get to their sports events, I could do lots of things that I would not have been able to do if I were in academia. It provided me a perfect balance, and I’m all about keeping a balance. In high powered positions you have to sometimes sacrifice certain things, but you have to keep it controlled. Even now, I officiate middle and high school basketball which takes me away a number of late afternoons in season, and sometimes requires schedule juggling or finding substitutes to fill-in at meetings, but it is worth it to me.

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The thing I like the least about this position is struggling with things like budget-related constraints, personnel issues, and when the logic of a plan is based on political implications and not scientific or clear policy matters.

**How does your current position compare to working in other settings, like academia or industry?**

My position with the EPA would be comparable to a senior executive vice president position in industry, and or somewhere between a department chair and a dean in academia. Because I am so closely connected to research my position is kind of unique in that regard.

The stresses I experience in my position are more similar to the stresses experienced in academia than industry, I think. Industry is bottom-line stress, academia is grant stress. I worry about delivering the right science, irrational budget changes that come from the political cloud of Washington, and keeping the doors open at the Lab level - hoping the staff doesn't become jaded. Overall, though, I think one's personality has a lot to do with the stress level you experience in your job. Peoples' management approaches have to do with how they stress themselves. I like delegating to give people an opportunity to grow and show themselves. I don't believe in micromanagement because it elevates the stress of the person doing the work and you stress yourself worrying. I am responsible for my program, but I am a part of a team and that fundamental concept helps me every day. I feel appropriately placed in my position; I mostly get good moral support from the people both above and below me.

**Why did you choose this career?**

I liked that my position would let me have a broader impact, and I thought from a management perspective that I could build a team. People who work with me realize that I have their back, and I think of myself as an assembler; I don't know the details of how all the parts of the machine work, but I know how to help assemble it.

**What are your career goals?**

Over the next few years I see myself getting annual planning efforts minimized and turning us into a more efficient operation. I want to change our communications so that people see that we're doing great things. For instance, for the 40<sup>th</sup> anniversary of EPA and Clean Air Act, we had a series of activities we called *Air Science 40* where we made a video that celebrated 40 years of air pollution research with Congressional briefings and various outreach activities. I want to do more of that.

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Three or four years from now, I'll take a couple of years to write up the papers that I need to finally pull together and then retire perhaps to do something else. A lot of my colleagues are in fact retiring already, but I personally finally feel that I am at a point in my career where I can do something that has a real positive impact... if I leave now I feel like I am wasting that resource the EPA and the public has invested in.

### **What path did you take to get to your current position?**

I come from a blue collar background. I got my bachelor's degree in biology from Providence College in Rhode Island. I then went to medical school in Europe for a year, realized it wasn't for me, and came back to teach middle school. While teaching I felt that I wanted to get a master's degree and perhaps join the environmental movement, so I went to Rutgers and got a master's in general environmental science. I had some opportunities to then go into the work force, but I liked the health implications of environmental science and thought maybe I wanted to stay in academia and do research. I ended up at Harvard School of Public Health working for Mary Amdur, widely considered to be the mother of air pollution health research. I got my Sc.D. and then did a somewhat atypical postdoc at Brookhaven National Laboratories, where they asked me to develop a small animal lung and cardiac physiology laboratory, focusing on the immediate impacts of air pollutants and animal models of disease and susceptibility. I worked under a mentor who was an inhalation toxicologist but was not a lung or heart biology person so I was doing some "missionary" work and I was expected to start from ground zero and build a peer evaluated laboratory for air pollution health studies in animal models. I worked there for seven years, and then Ronald Reagan came into office and his agenda was less environmental and energy-use impact conscious. The Department of Energy (ERDA at the time) reduced their air pollution interest. So, I decided to take a position at the EPA and thought I'd move to academia from there after a couple years, but opportunities for interesting work continued to grow at EPA and the RTP area was a great place to live, so here I stayed.

### **In what ways does your degree help you with this job?**

It's been very important that I have the degree and research career record that I have, because it gives me the credibility I need to have the respect of my team, from the staff to the senior managers in DC including congressional people— virtually everyone I work with. But my efforts to associate with and learn from people who know things that I don't know have been really helpful to me. I frequently have to learn new science out of my domain; my degree ensures that I *can* learn about these areas allowing me to have educated conversations and promote what my team does in their labs. My research knowledge is important, but I know enough about these other issues that I can talk substantively about them as well.

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### **If you could begin again in your career, what would you do differently?**

I think I've been really fortunate in a lot of ways. My physiology background has been very important; physiology is "fundamental biological systems" thinking, which provides an understanding of how an organism works; it's inherently an understanding of life cycle. That sort of training helps me with most every problem and challenge I undertake. What is the impact of other factors on the central core, taking us to a decision? How do we make better use of and make more efficient our energy generation systems for testing emissions from power plants, and are there potential human impacts? My background gives me an ability to look at how to unify different groups, to make the program into an organism. I have a broader lens that I use to look at everything. We are all trained to focus on one tiny question in the laboratory, but then we go into the real world and we're asked to see and make decisions in a much broader and complex arena.

### **What would be your career advice to someone who is currently in a genetics Ph.D. program? To someone who is currently a postdoctoral associate?**

Communication is key. Not just oral communication, but written communication as well. A lot of scientists can't write, but that's an important arrow to have in your quiver.

Also, it's really important to make your own opportunities as well as being aware of opportunities that come available to you. Be your own advocate and take on challenges that stretch your skills and creativity.

Know where your core work fits into the bigger picture. We DO need people who isolate a specific gene, but realize that the gene and its function fits into the bigger picture. Nothing in science is isolated. We can work in specificity but don't just throw your papers over the fence for somebody else to find. I would suggest that you always put your work in that context.

Be assertive in your thinking, in your career, in working with other people... I don't mean be a jerk, but know what you are, what you know, what you don't know. Learn from your mistakes, and take advantage of other people's expertise. Some people who may not have seemed willing to collaborate are often very open to collaboration if approached correctly.

When you're working on your degree, be an entrepreneur. You're studying in a top notch institution with top notch people; ask questions, make a lot of contacts there, and look for opportunities to learn and network. Go knock on doors and access these folks to develop your expertise and open your mind. Don't ever step back because you're afraid of failing.