

Toxicologist

Job Description

Toxicologists study the biological impact of toxic chemicals, drugs, and radiation on organisms and the environment in order to determine safe limits of dosage and exposure. This evaluation is done through the development of experiments and analysis of the data they yield. Toxicologists aggregate the results of many different studies to inform their risk analyses, reports and recommendations for regulatory agencies.

Salary

Entry – \$52,227

Middle – \$78,631

Top – \$109,822

Core Tasks

- Measure toxic substances or radiation and any harmful effect they have on humans, animals, plants or ecosystems
- Plan and carry out a range of experiments in the field or laboratories, looking at the biological systems of plants and animals
- Analyse and evaluate statistical data and research scientific literature
- Write reports and scientific papers, present findings and, in the case of forensic work, give evidence in court
- Advise on the safe handling of toxic substances and radiation in production or in the event of an accident

Workplace / Environment

- **Work hours**
Approx. 40 hours/week
High-priority experiments may require extra hours in the lab during evenings or weekends.
- **Environment**
Labrotory Work testing chemicals and/or working with animals
Office Work designing experiments, reviewing literature, and writing reports
- **Travel**
Travel is **uncommon** but may occur for collaborative work or **conferences**

Education / Prerequisites

Education Level

Undergraduate degree in chemistry, biology, or a related field. A bachelor's or master's degree is needed to work in the lab

Licensing

N/A, but certain organizations may require employees to complete training

Pre-Job Preparation

Any laboratory experience gained prior to interviewing professionally will prove beneficial

Experience

Soft skills

- Time management
- Attention to detail
- Collaboration skills

Technical skills

- Analytical and critical thinking
- Problem-solving skills



Career Path: Stephanie Blair

About Me

Aquatic Toxicology Researcher

- PhD Student, Washington Stormwater Center

Masters in Environmental Science ~ Evergreen State College

Early Experiences

“I grew up in the Northwest. I feel like caring about nature and animals has always been a part of my identity. It’s something I felt because I’ve had lots of life **experiences in the outdoors**, like hiking and backpacking.”



“I decided to pursue a Bachelor's of Science degree. That was a hard decision because all through high school I wanted to be an **artist**, because I just loved the creative process—anything to do with drawing and painting, where I could find an outlet for creativity. I realized though that I needed a formal education, and what better way to get that than to study **science**?”

Undergrad Choices



“I really got into doing **environmental science** work as an undergrad. For my capstone project I was looking at endocrine disruptors with a toxicologist. I did my undergrad at Evergreen. It was wonderful. I really enjoyed it and always wanted to do **toxicology research**. Getting my Masters—it was a 2 year program—went by really fast.”

“I did a **Bachelors of Science** with an emphasis in **chemistry**. I did all of the chemistry classes: inorganic chemistry, physical chemistry, and organic chemistry. My favorite was analytical chemistry, because you could go out, take samples, and answer questions about what’s happening in the environment.”

Unexpected Employment

“I graduated around the **2008 economic crash** so it was really difficult to find a job. I ended up working at an **eye care clinic** in Olympia. I never spent a lot of time in customer-service-related jobs, so working with people was sort of a new thing for me. I found that I really enjoyed spending time with people coming for their eye exams. But, my love was always for environmental science and environmental studies.”

Graduate School Experiences

“You can be an **older student** and decide to go back to school. If you have been out of school for a long time, and you don't have the study skills, all it really takes is determination to be able to to pursue it. I'm an example of those things.”

“I really wanted to do a PhD because I love **working in the lab** and love **research**. I wanted more time to dig into a subject really deeply and develop expertise. As a PhD student, I'm responsible for developing a thesis project. The first couple years is mostly designing what's called a program of study. I have to figure out what classes I need to take to get the background knowledge that I need to conduct my research.”

“The work that I'm doing is to investigate the toxic mode of action in the acute mortality response of **coho** exposed to roadway runoff. My job is to try to figure out the mode of action—so how the coho are being affected by an unknown chemical. I do a lot in **blood chemistry**. The biggest challenge of this is that we don't know what the toxic mode of action is. We have no idea why they're dying. My part is in a small portion of a larger research group investigating this.”

“I'm hoping to continue to find some type of **toxicology work** in the Pacific Northwest. I still would love to work with salmon. I really have a love for fish in general. There's a lot of interesting species out there that are ecologically important.”

About My Job

“Toxicology combines my love for fish and the environment.”

Pros

- “My favorite part is probably working with the **fish**. They're adorable to me! I never considered myself a fish person necessarily until I spent a lot of time with them. You watch them and you really think, ‘Wow, they really aren't that different from other pets!’ They feel and respond to you.”
- “My work has been a way to give back to native communities. I've spent a lot of time living in **Skokomish** and have family there. The best memories I have with salmon and rivers are in Skokomish. I want everyone to be able to experience that. I want these places to be available for future generations. I want them to be just as beautiful and even more so in the future.”

Cons

- My least favorite part is doing **animal testing**—it causes a lot of distress to these animals. That is extremely challenging for me. I feel that I take it very seriously though and with high integrity. It motivates me to try to fix the problems we're facing, so then this type of research is needed anymore.”

Classwork

- “We take **classes on campus**. There’s an audio-visual system where we can connect with Pullman and Vancouver. At WSU Puyallup, it’s a Research and Extension Facility, so it’s a little bit different from a traditional college campus. We’re very **small** and we don’t have a ton of staff. There’s a plant pathology lab, a soil lab, and everyone kind of works in their own separate departments within WSU Puyallup.”

Skills

- “It’s really important to look at things from **different perspectives**. Toxicologists in general need an interdisciplinary focus. We need to think about problems at their complexity and not try to break them down into boxes with only one component. In my education, I thought a lot about social justice, environmental justice, and aspects of the problems with climate change and environmental pollution.”
- “As a research scientist it’s really important to **connect with your community**. It’s important to not just be working in some ivory tower somewhere. You want to make sure you’re getting feedback from people who are actually going to benefit from the research that you’re doing. They can shape your research and tell you a lot about what the proper scope of your work could be.”

Fieldwork

- “I spend most of my time at the **fish lab** in WSU Puyallup, physically running the **experiments**, as well as doing **research**. Working in a salmon toxicology lab was important because it brought together my love for these fish—for what they do for our ecosystem and how important they are culturally and commercially.”
- “I spend time making **connections directly with the community** near WSU Puyallup. There’s a lot of work that we’ve done with the farmers and agriculture sectors in the Puyallup River Watershed. We’ve also been making more connections with the Puyallup Tribe there. It’s very community connected. I’ve been trying to do more with that and learn directly about local problems in our area.”

Education/Experience

- “I think there’s a necessity for people who have a strong **connection with animals**. I encourage people who are connected with animals to get involved. You need people who really care about animals to do this type of work responsibly.”
- “It took a while to get to where I am. I needed to **experience a lot** of things first before I could really feel passionate about what I’m doing. You need to have a strong **motivation** to not be overwhelmed by the process of getting a PhD. I encourage anyone who wants to go for their full PhD to figure out what they’re passionate about. Figure out what motivates you as a human being.”

