

# **CAREER GUIDE FOR ENVIRONMENTAL SCIENTIST/SPECIALIST**

SOC Code: 19-2041

Pay Band(s): 4 and 5 ([Salary Structure](#))

**Standard Occupational Description:** Conduct research or perform investigation for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or the health of the population. Utilizing knowledge of various scientific disciplines may collect, synthesize, study, report, and take action based on data derived from measurements or observations of air, food, soil, water, and other sources.

**Environmental Scientist/Specialist positions in the Commonwealth are assigned to the following Roles in the [Environmental Services Career Group](#):**

[Environmental Specialist I](#)

[Environmental Specialist II](#)

While Environmental Scientist/Specialist within the Commonwealth are all located within the Environmental Services Career Group, individuals may want to pursue other opportunities within the Commonwealth depending upon individual training, education, knowledge, skills, abilities, and interests.

Other Career Group(s) that may be of interest are:

[Architecture and Engineering](#)

[Engineering Technology](#)

[Laboratory and Research Technicians and Specialists](#)

[Life and Physical Science](#)

[Public Safety Compliance](#)

## **SKILLS, KNOWLEDGE, ABILITIES AND TASKS**

(Technical and Functional Expertise)

### **Skills**

**Note:** *The technical and functional skills listed below are based on general occupational qualifications for Environmental Scientist/Specialist commonly recognized by most employers. Typically, you will not be required to have all of the skills listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.*

1. Understanding written sentences and paragraphs in work related documents.
2. Using mathematics to solve problems.
3. Using scientific rules and methods to solve problems.
4. Understanding the implications of new information for both current and future problem solving and decision-making.
5. Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
6. Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
7. Analyzing needs and product requirements to create a design.

8. Communicating effectively in writing as appropriate for the needs of the audience.
9. Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.
10. Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.

## **Knowledge**

**Note:** The technical and functional knowledge statements listed below are based on general occupational qualifications for Environmental Scientist/Specialist commonly recognized by most employers. Typically, you will not be required to have all of the knowledge listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.

### The **Knowledge** of:

1. Arithmetic, algebra, geometry, calculus, statistics, and their applications.
2. Plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.
3. Chemical composition, structure, and properties of substances and of the chemical processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs, production techniques, and disposal methods.

## **Abilities**

**Note:** The technical and functional abilities listed below are based on general occupational qualifications for Environmental Scientist/Specialist commonly recognized by most employers. Typically, you will not be required to have all of the abilities listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.

### The **Ability** to:

1. Choose the right mathematical methods or formulas to solve a problem.
2. Communicate information and ideas in writing so others will understand.
3. Read and understand information and ideas presented in writing.
4. Tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.
5. Combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).
6. Communicate information and ideas in speaking so others will understand.
7. Add, subtract, multiply, or divide quickly and correctly.
8. Apply general rules to specific problems to produce answers that make sense.
9. Listen to and understand information and ideas presented through spoken words and sentences.
10. Come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.

## **Tasks**

**Note:** The following is a list of sample tasks typically performed by Environmental Scientist/Specialist. Employees in this occupation will not necessarily perform all of the tasks listed.

1. Analyze data to determine validity, quality, and scientific significance, and to interpret correlations between human activities and environmental effects.

2. Collect, synthesize, and analyze data derived from pollution emission measurements, atmospheric monitoring, meteorological and mineralogical information, and soil or water samples.
3. Conduct environmental audits and inspections, and investigations of violations.
4. Design and direct studies to obtain technical environmental information about planned projects.
5. Determine data collection methods to be employed in research projects and surveys.
6. Develop methods to minimize the impact of production processes on the environment, based on the study and assessment of industrial production, environmental legislation, and physical, biological, and social environments.
7. Evaluate violations or problems discovered during inspections in order to determine appropriate regulatory actions or to provide advice on the development and prosecution of regulatory cases.
8. Investigate and report on accidents affecting the environment.
9. Monitor effects of pollution and land degradation, and recommend means of prevention or control.
10. Monitor environmental impacts of development activities.

## **INTERESTED?**

Like people, occupations have traits or characteristics. These characteristics give important clues about the nature of the work and work environment, and give you an opportunity to match your own personal interests to a specific occupation. When you choose a job in an occupation that matches your own interests you have taken an important step in planning a successful and rewarding career.

The occupation of Environmental Scientist/Specialist has **Investigative** and **Realistic** characteristics as described below:

**Investigative** — Investigative occupations frequently involve working with ideas, and require an extensive amount of thinking. These occupations can involve searching for facts and figuring out problems mentally.

**Realistic** — Realistic occupations frequently involve work activities that include practical, hands-on problems and solutions. They often deal with plants, animals, and real-world materials like wood, tools, and machinery. Many of the occupations require working outside, and do not involve a lot of paperwork or working closely with others.

## **LICENSURE, REGISTRATION, OR CERTIFICATION REQUIREMENTS**

Generally this is not required for Environmental Scientist/Specialist positions in state government. However there are some positions that do require licensure specific to environmental jobs such as a professional engineering license. The Department of Professional and Occupational Regulations provides licensure information for environmental engineers who wish to obtain licensure on the Department of Professional & Occupational Regulations' web site at: <http://www.dpor.virginia.gov/>.

For those environmental specialists working with wastewater, certification is required in: Certified Nutrient Management Planning, Certified Erosion and Sediment control and Storm Water Inspection.

Also some positions may require various OSHA certifications. Other certifying organizations follow:

Certifying organization for Environmental Scientist and Environmental Professionals is the National Registry of Environmental Professionals web site: <http://www.nrep.org/index.html>

The Certifying Organization for Environmental Specialist/Sanitarian is the National Environmental Health Association web site: <http://www.neha.org>

All agencies that have environmental specialists could provide specific certification/licensure requirements. Primary agencies that hire environmental specialist include:

The Department of Environmental Quality: <http://www.deq.state.va.us/>;

The Department of Conservation and Recreation: <http://www.dcr.state.va.us/index.htm>; and

The Virginia Department of Transportation: [http://viriniadot.org/default\\_nocookie.asp](http://viriniadot.org/default_nocookie.asp).

The Virginia Department of Health: <http://www.vdh.state.va.us/>

## **EDUCATIONAL, TRAINING, AND LEARNING OPPORTUNITIES**

The Department of Labor provides the following information:

Environmental scientists/specialists use their knowledge of the physical makeup and history of the Earth to protect the environment; locate water, mineral, and energy resources; predict future geologic hazards; and offer advice on construction and land-use projects.

Environmental scientists/specialists conduct research to identify and abate or eliminate sources of pollutants that affect people, wildlife, and their environments. These workers analyze and report measurements and observations of air, water, soil, and other sources and make recommendations on how best to clean and preserve the environment.

Many environmental scientists do work and have training that is similar to other physical or life scientists, but is applied to environmental areas. Many specialize in some specific area, such as environmental ecology and conservation, environmental chemistry, environmental biology, or fisheries science.

A bachelor's degree is adequate for a few entry-level positions, but environmental scientists increasingly need a master's degree in a natural science. A master's degree also is the minimum educational requirement for most entry-level research positions in private industry, Federal agencies, and State geological surveys. A doctoral degree is necessary for most high-level research positions.

Many environmental scientists earn degrees in life science, chemistry, geology, geophysics, atmospheric science, or physics and then, either through further education or through their research interests and work experience, apply their education to environmental areas. Others earn a degree in environmental science. A bachelor's degree in environmental science offers an interdisciplinary approach to the natural sciences, with an emphasis on biology, chemistry, and geology.

Agencies in the Commonwealth of Virginia offer additional training for Environmental Specialists. As an example, the Department of Environmental Quality offers the following training programs for their environmental specialists:

Water Quality Monitoring Standard Operating Procedures  
Groundwater and Soils  
Investigative Techniques (Water Program)  
Compliance Inspections (Water Program)  
Health and Safety  
Basic Inspection  
National Pollution Discharge Elimination System (Permit writers)

For more information on the Department of Environmental Quality's career opportunities and training programs visit their web site: <http://www.deq.state.va.us/>

The State Council of Higher Education lists several Virginia educational institutions that offer programs in environmental science. This information is found on the web site: [http://research.schev.edu/degreeinventory/inventory\\_2.asp?from=k12](http://research.schev.edu/degreeinventory/inventory_2.asp?from=k12)

## **COMMONWEALTH COMPETENCIES**

Competencies are a set of identified behaviors, knowledge, skills, and abilities that directly and positively impact the success of employees and the organization. Competencies can be observed and measured. When consistently demonstrated, competencies make employees particularly effective in their work. Competencies help lay out a road map to career success. You can use the Commonwealth Competencies to help improve your individual performance by adopting behaviors that make high performing employees successful in their jobs. In this way, you can use the Commonwealth Competencies for your further professional development.

### **The Commonwealth Competencies are:**

1. Technical and Functional Expertise
2. Understanding the Business
3. Achieving Results
4. Serving the Customer
5. Teamwork
6. Interpersonal and Communication Skills
7. Leadership and Personal Effectiveness

The above competencies may be applied to employees throughout the Commonwealth of Virginia. They can be rank-ordered by agencies and hiring managers to represent the needs of a specific job. The rank ordering will change depending upon the occupation, an organization's priorities, the actual job requirements, and the supervisor's preferences.

Career success is both about what you do (applying your technical knowledge, skills, and ability) and how you do it (the consistent behaviors you demonstrate and choose to use) while interacting and communicating with others. Hopefully, by studying the Commonwealth competencies, identifying your developmental opportunities, and working to refine your own competence, you can take charge of your career!

For additional information about the **Commonwealth Competencies** go to: [http://jobs.state.va.us/cc\\_planningctr.htm](http://jobs.state.va.us/cc_planningctr.htm). For the competencies, we first list the competencies

and then define each. Finally, we list competency indicators; to describe what successful performance looks like.

## **COMMONWEALTH CAREER PATH**

Career opportunities in the Commonwealth are not limited to moving “up” to the next highest role and pay band, changing positions, or to becoming a supervisor. That’s because most roles describe a broad group of occupationally related positions that perform a range of work that requires increased knowledge and skills. For that reason, Commonwealth roles describe the career paths within the same or higher-level role for the same or different Career Group. The broad salary range and the Commonwealth’s pay practices provide flexibility in recognizing career development and advancement. ([Salary Structure](#))

For example: **Environmental Scientist/Specialist**

PAY BAND	PRACTITIONER ROLES
4	Environmental Specialist I
5	Environmental Specialist II

PAY BAND	MANAGER ROLES
5	Environmental Manager I
6	Environmental Manager II
7	Environmental Manager III

### **Sample Career Path**

#### **Environmental Specialist I**

The Environmental Specialist I role provides career tracks for environmental specialists who are responsible for conducting projects or components of programs related to environmental management public health and safety and/or consumer protection. Level of expertise ranges from entry-level specialist to supervisor of specialized inspection activities to include planning and development for the assigned program or territory.

#### **Environmental Specialist II**

The Environmental Specialist II role provides career tracks for environmental specialists who serve as program experts in the conduct of environmental management and public health and safety and/or consumer protection activities or have supervisory and/or program coordination responsibilities.

#### **Environmental Manager I**

The Environmental Manager I role provides career tracks for managers of an environmental program(s) and staff within a geographic or other designated area. The assigned programs impact the environment and/or public safety and health. Responsibilities include planning, administering, and generating policies, specifications and standards to promote program goals and objectives.

#### **Environmental Manager II**

The Environmental Manager II role provides career tracks for mid-level managers, district managers or statewide program directors responsible for managing environmental program

areas and staff. Employees manage a major agency program directly tied to the mission of the agency or multiple programs. Oversight of operational activities include: inspections, compliance, enforcement, conservation, analysis, licensing and certification, and public education, technical services or control activities having an impact on public health and the environment.

### **Environmental Manager III**

The Environmental Manager III role provides career tracks for executive managers having responsibilities ranging from managing a geographic region of an agency, or, statewide responsibility for directing multiple programs within a discipline to responsible for all environmental management programs statewide.

## **ADDITIONAL OCCUPATIONAL INFORMATION CAN BE FOUND AT:**

O\*NET (Occupational Information Network)

[http://online.onetcenter.org/gen\\_search\\_page](http://online.onetcenter.org/gen_search_page)

Virginia Employment Commission

<http://www.alex.vec.state.va.us/>

Career One Stop

<http://www.careeronestop.org/>

Virginia Career Resource Network

<http://www.vacrn.net/>