



Occupation: Environmental Science and Protection Technicians

[O*NET Code: 19-4042.00](#)

Competencies - On-the-Job Training (paid):

1. Collect samples of gases, soils, water, industrial wastewater, or asbestos products to conduct tests on pollutant levels or identify sources of pollution.
2. Record test data and prepare summaries or charts that interpret test results.
3. Prepare samples for testing and analysis. Discuss test results and analyses with team members.
4. Weigh, analyze, or measure collected sample particles, such as lead, coal dust, or rock, to determine concentration of pollutants.
5. Calibrate microscopes or test instruments.
6. Maintain files, such as hazardous waste databases, chemical usage data, personnel exposure information, or diagrams showing equipment locations.
7. Support set up of equipment or stations to monitor and collect pollutants from sites, such as smokestacks, manufacturing plants, or mechanical equipment.
8. Monitor emission control devices to ensure they are operating properly and comply with state and federal regulations.
9. Learn about amounts and kinds of chemicals to use in destroying harmful organisms or removing impurities from purification systems.
10. Project Management Software —Microsoft Teams: Utilize Microsoft Teams and Outlook to schedule and attend meetings, collaborate with team members, manage project tasks, and track progress.
11. Spreadsheet software —Use Microsoft Excel to analyze data, create spreadsheets, and perform calculations.
12. Utilize Geographic Information Systems (GIS) to communicate and share data.
13. Utilize graphics, photo imaging, or mapping software to communicate and share information.
14. Utilize public and private databases and artificial intelligence to gather information related to pollution and conservation.

15. Analyzing Data or Information — Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.
16. Organizing, Planning, and Prioritizing Work — Developing specific goals and plans to prioritize, organize, and accomplish your work.
17. Making Decisions and Solving Problems — Analyzing information and evaluating results to choose the best solution and solve problems.
18. Communicating with Supervisors, Peers, or Subordinates — Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
19. Establishing and Maintaining Interpersonal Relationships — Developing constructive and cooperative working relationships with others.
20. Communicating with People Outside the Organization — Communicating with people outside the organization, representing the organization to customers, the public, government, or other external sources.

Environmental Science and Protection Technicians

The Related and Supplemental Instruction (RSI) detailed below supports preparing for the competencies applied in on-the-job paid apprenticeship hours. The required **150 unpaid RSI per year** is delivered via a combination of online and in-person studies, activities, events, and collaborative projects with Open Source Ag.

Competency Exploration and Practice = 150 hours

Environmental Science and Protection Technician Skills:

40 +- hours

- Collect samples of gases, soils, water, industrial wastewater, or asbestos products to conduct tests on pollutant levels or identify sources of pollution.
- Record test data and prepare summaries or charts that interpret test results.
- Prepare samples for testing and analysis.
- Discuss test results and analyses with team members.
- Inspect workplaces to ensure the absence of health and safety hazards, such as high noise levels, radiation, or potential lighting hazards.
- Weigh, analyze, or measure collected sample particles, such as lead, coal dust, or rock, to determine concentration of pollutants.
- Calibrate microscopes or test instruments.
- Maintain files, such as hazardous waste databases, chemical usage data, personnel exposure information, or diagrams showing equipment locations.
- Support set up of equipment or stations to monitor and collect pollutants from sites, such as smokestacks, manufacturing plants, or mechanical equipment.
- Monitor emission control devices to ensure they are operating properly and comply with state and federal regulations.
- Support or implement site recycling or hazardous waste stream programs.

- Learn about amounts and kinds of chemicals to use in destroying harmful organisms or removing impurities from purification systems.
- Examine and analyze material for presence and concentration of contaminants, such as asbestos, using variety of microscopes.

O*NET

The skillsets below reflect priorities requested by employers and noted in the O*NET code for this sector: <https://www.onetonline.org/link/summary/19-4042.00>

Microsoft Office Suite:

20+- hours

- Project Management Software: Utilize Microsoft Teams and Outlook to schedule and attend meetings, collaborate with team members, manage project tasks, and track progress.
- Presentation software: Microsoft PowerPoint: Create engaging visualizations.
- Spreadsheet software: Use Microsoft Excel to analyze data, create spreadsheets, and perform calculations.
- Word processing software: Use Microsoft Word to create and edit professional documents, reports, and correspondence.

Technology:

30+- hours

- Support and maintain computer databases and analytical or scientific software.
- Utilize public and private databases and artificial intelligence to gather information related to pollution and conservation.
- Communicate projects and progress utilizing computer aided design CAD software.
- Utilize Geographic Information Systems (GIS) to communicate and share data.
- Utilize graphics, photo imaging, or mapping software to communicate and share information.

Communication:

20+- hours

- Communicating with Supervisors, Peers, or Subordinates: Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Establishing and Maintaining Interpersonal Relationships: Developing constructive and cooperative working relationships with others.
- Communicating with People Outside the Organization: Communicating with people outside the organization, representing the organization to customers, the public, government, and other external sources.
- Resolving Conflicts and Negotiating with Others: Handling complaints, settling disputes, and resolving grievances and conflicts, or otherwise negotiating with others.
- Performing for or Working Directly with the Public: Performing for people or dealing directly with the public.
- Interpreting the Meaning of Information for Others: Translating or explaining what information means and how it can be used.

Analysis:

20+- hours

- Support standardized tests to ensure materials or supplies used throughout power supply systems meet processing and safety specifications.
- Perform statistical analysis of environmental data.

- Identifying Objects, Actions, and Events — Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.
- Getting Information — Observing, receiving, and otherwise obtaining information from all relevant sources.
- Analyzing Data or Information — Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.
- Organizing, Planning, and Prioritizing Work — Developing specific goals and plans to prioritize, organize, and accomplish your work.
- Making Decisions and Solving Problems — Analyzing information and evaluating results to choose the best solution and solve problems.
- Evaluating Information to Determine Compliance with Standards — Using relevant information and individual judgment to determine whether events or processes comply with laws, regulations, or standards.
- Processing Information — Compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data.

Operations:

20+- hours

- Inspecting Equipment, Structures, or Materials: Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.
- Monitoring Processes, Materials, or Surroundings: Monitoring and reviewing information from materials, events, or the environment, to detect or assess problems.
- Documenting/Recording Information: Entering, transcribing, recording, storing, or maintaining information.
- Estimating the Quantifiable Characteristics of Products, Events, or Information: Estimating sizes, distances, and quantities; or determining time, costs, resources, or materials needed to perform a work activity.
- Repairing and Maintaining Mechanical Equipment: Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily based on mechanical (not electronic) principles.