



Y-CITYSCI: A Youth-Led Citizen Science Network for Community Environmental Assessment

Environmental Assessment Curriculum: Lesson 6

Grade Level: Middle school

Duration: 1 hour

Soil Pollution with Guest Scientist

Next Generation Science Standards

Disciplinary Core Ideas:

ESS3.C: Human impacts on Earth systems

ESS3.A: Natural Resources

Crosscutting Concepts:

Cause and Effect

Stability and Change

Science and Engineering Practices:

3: Planning and Carrying Out Investigations

Objectives

1. Students will meet a real scientist and learn about the tools and content used in their research.

Materials

- Guest scientist
- X-ray fluorescence spectrometry (or other soil tool(s))

Activities

Bell Ringer: Review the soil pollution information that was covered in the previous session. Introduce the guest scientist and go over how students are expected to behave and treat a guest.

Activity: Invite a guest scientist that is an expert in soil science. Have the guest introduce themselves along with the education and research experience they have. If you were able to arrange for them to use their lab tools to test what chemicals are present in the soil samples that the students collected, have them share those results





with the students. They should hold a discussion about the potential effects the resulting chemicals may have on the environment.

They should spend the remainder of the class period teaching the students additional information about soil pollution and introduce tools they use in their research (such as the x-ray fluorescence spectrometer) that measures aspects of soil makeup, quality, and pollution. Allow students to have hands-on practice using tools if possible.