Demonstration – Lead Particulate Simulation

Purpose

To visualize contaminate particles as they are released into the air and observe their ultimate settling.

Overview

This is a simple demonstration that brings the point home with a strong visual that provides a focus for students. Once students become aware that lead is toxic to humans and that it is found all around us, they should be ready to participate in the following lab activities. These labs will provide students with inexpensive tools to determine if they have high levels of lead near their own homes.

Time

15 minutes

Key Concepts

Sandblasting lead-based paints and residue from leaded fuels are two of the various ways that lead particles can be introduced into the air. As lead particles fall out of the air, they ultimately settle on objects (such as soil and toys) and can be ingested by young children. Lead particles in the air can be breathed directly into the lungs.

Skills

Making observations
Forming hypotheses
Understanding and describing interrelationships in nature
Communicating observations orally

Materials

Large Clear Plastic Container
1 cup of Flour
2 cups of Sand
Small Rocks of Various Sizes
Small Toy

Facilitator Preparation

Prepare a clear plastic container. Fill the container with sand, flour, and rocks of various sizes. Make sure the container is allowed to settle completely so the interior sides of the container are clean. The flour simulates the lead particulate and the sand and rocks simulate the soil.
Background

Discuss with students the various ways that lead particles can be introduced into the air. Sandblasted lead-based paint and residue from leaded fuels are two examples discussed previously. Explain to the students that they are going to observe what happens when the smallest particles of lead are introduced into the air.

Procedure

Take the container filled with sand, flour, and rocks and shake vigorously for 15 seconds. Hold the container up so that all students can see the flour residue on the sides of the container. Ask the students what they think the demo is trying to simulate. They should begin answering that the flour sticking to the side of the container represents the lead particles in the air. Some students may bring up the point that people can breathe the lead particles into their lungs. Other students may point out that as lead particles fall out of the air, they ultimately settle on objects (such as soil and toys) and can be ingested by young children. If students mention the lead fallout in the soil but do not think of the possible adhesion of lead particles to children’s toys, open the container and drop in a small toy. Shake the container once again and observe the toy as it becomes covered with flour particles.

Student Assessment

Have students discuss the various ways that lead particles can be introduced into the air. Students explain what they think the demonstration is trying to simulate. Students will describe what they see happening with the lead particulate demonstration. Students discuss why this is important information to know regarding human health.