

PROJECT TITLE:

Seismic Energy in Action: Modeling the Impact of Limestone Blasting

PROJECT OVERVIEW:

In this project, students will design and create a visual and/or physical model that demonstrates how seismic energy waves travel through the ground as a result of limestone (lime rock) blasting. The goal is to illustrate how these energy waves move, how they interact with different surfaces, and how they can impact nearby structures and communities.

OBJECTIVE:

Students will:

- Understand the basics of seismic energy and wave movement
- Explore how blasting generates ground vibrations
- Demonstrate how these vibrations travel through different materials (soil, water, rock, structures)
- Highlight the potential effects on homes, buildings, and infrastructure

PROJECT REQUIREMENTS:

Each model should clearly show:

1. **The Source of Energy**
 - Represent a blasting site where seismic energy originates
2. **Wave Movement**
 - Illustrate how seismic waves travel outward from the blast
 - Include directional movement (e.g., spreading waves, ripple effects)
3. **Types of Waves** (e.g., P-waves, S-waves, Love wave and Rayleigh)
4. **Impact on Surroundings**
 - Show how waves interact with:
 - Soil vs. solid rock
 - Structures (e.g., homes, buildings, infrastructure)
5. **Real-World Connection**
 - Include a short explanation (poster or written summary) describing:
 - What lime rock blasting is
 - Why it is used
 - How it can affect nearby communities

FORMAT OPTIONS:

Students may choose to create:

- A 3D physical model (shoebox, diorama, layered materials, etc.)
- A digital model or animation
- A hybrid model with both physical elements and visual aids

CREATIVITY ENCOURAGED:

Think outside the box—use materials like sand, gelatin, foam, or even simple mechanical

demonstrations to show how vibrations travel. The more interactive and easy to understand, the better.

EVALUATION CRITERIA:

Projects will be evaluated based on:

- Accuracy of scientific concepts
- Clarity of wave movement and impact
- Creativity and effort
- Ability to explain the model and its real-world relevance

GOAL:

By the end of this project, students should be able to clearly explain how seismic energy from blasting travels through the local strata and why understanding these effects is important for protecting communities and infrastructure.

PRIZES:

Let's make it worth the extra effort:

- 🏆 **1st Place:** \$500
- 🥈 **2nd Place:** \$300
- 🥉 **3rd Place:** \$200

Achievement award that can be spent at students discretion. Winning projects will demonstrate not just understanding, but the ability to clearly communicate complex concepts in a way that anyone, even someone with zero science background can understand.