A Volcano Tussle -
How Much Do We Risk?

Living with a VOLCANO in Your Backyard
MOUNT RAINIER

Grade Level: 5-12+

Learner Objectives:

Students will:

- Improve their understanding of the complexity and interconnected relationship of geologic and societal issues pertaining to volcanoes and their hazards, especially those within Mount Rainier National Park

Setting: Classroom

Timeframe: Advance instructions and student preparations required; 45 minutes+ for a class "public meeting"

Materials:

- *"List of Meeting Attendees"* student page
- Library or internet access

Vocabulary: Debris flow, earthquakes, glacial outburst flood, lahars, lava flow, pyroclastic flows, rockfall

USGS science for a changing world

NATIONAL PARK SERVICE

Living with a Volcano in Your Backyard- An Educator's Guide with Emphasis on Mount Rainier

Prepared in collaboration with the National Park Service

U.S. Department of the Interior
U.S. Geological Survey

General Information Product 19

Overview

Students play the role of a visitor or other person with interest in facilities at Mount Rainier National Park. Students write a position paper on an issue and later defend their points in class or at a public meeting.

Skills: Research, debate, clarify, apply, draw conclusions

Benchmarks:

Please see the Mount Rainier National Park Education Program website for the most recent alignment of these activities with Washington State and nationally approved education standards.

http://www.nps.gov/mora/forteachers/curriculummaterials.htm

Activity last modified: March 31, 2011

Teacher Background

Scenario: Students will play the part of people with vested interests in the management of campgrounds at Mount Rainier National Park. Park managers are considering the closure of some campgrounds because of recent ***rockfalls*** and small ***debris flows*** that threaten these facilities. Cougar Rock Campground and White River Campground are under consideration for closure. Thousands of tent campers, trailer, and motor home campers use these "front country" campgrounds every year.

Preparing Your Students

Before presenting this activity, students should have completed other Educator Guide activities that help them understand geologic processes at Mount Rainier. Show the video **Understanding Volcanic Hazards** or conduct the activity **Volcanic Processes**. Discuss how the hazards pertain to Mount Rainier. The video, **Perilous Beauty-the Hidden Dangers of Mount Rainier**, addresses volcanic hazards with particular reference to Mount Rainier. Students should understand that some geologic hazards (rockfall, ***glacial outburst floods***, debris flows, ***earthquakes***, and some ***lahars***) can take place during non-eruptive times. Other hazards such as ***lava flows***, ***pyroclastic flows*** and lahars derived from melting of snow and ice, during volcanic eruptions.

Procedure

A Volcano Tussle

Students write position papers on a controversial geological hazard issue, and then defend their position at an "in–class" or real public meeting.

1. Begin this activity by asking students to identify how they, their families, and neighbors "relate" to Mount Rainier National Park. Are they day visitors, campers, or people who never use the Park? Ask students to help make a list of other people who might have an interest in park policy. Add your list of "meeting attendees" to those on the student page.

2. Assign roles to students. Instruct them to write a position paper that addresses the scenario and provides recommendations for consideration by Park Service managers. Students should defend their position at the "public meeting," in class or an actual meeting within the community. Three paragraphs is the recommended position paper length. This can be assigned as homework or class work.

3. Conduct a "public meeting" in your classroom. Students on the Park Advisory Board should ask for opinions from meeting participants.

4. Students on the Park Advisory Board then deliberate and prepare a recommendation regarding campground closure or some other action that should take place to safeguard visitors from geologic hazards.

Adaptations

- Choose any other natural hazard in your community or elsewhere in the world. Follow the same procedures presented in the activity.

Extensions

- Students prepare a position paper about a current issue and present their view at a public meeting within their community.

Assessment

Pay particular attention to how students apply their basic knowledge of volcanic processes and hazards to decision making. Students should be able to write knowledgeably about these hazards, present the hazards objectively, and relate hazards to human activity within the park.

References

Driedger, C., and Scott, K., 2002, Mount Rainier—learning to live with volcanic risk: U.S. Geological Survey Fact Sheet 034–02, 4 p.

Hoblitt, R.P., Walder, J.S., Driedger, C.L., Scott, K.M., Pringle, P.T., and Vallance, J.W., 1998, Volcano hazards from Mount Rainier, Washington—1998 volcano-hazards assessment report: U.S. Geological Survey, Open-File Report 94–428, 10 p.

Mount Rainier Volcano Hazards Work Group, 1999, Mount Rainier volcano hazards response plan: Pierce County Department of Emergency Services, 103 p.

Refer to **Internet Resources Page** for a list of resources available as a supplement to this activity.

Student Page

List Of Meeting Attendees

Instructions: *Your teacher will assign each of you the role of a participant at a public meeting. Use Internet searches, library resources, and interviews to write a position paper addressing your view of the scenario. Provide recommendations that National Park Service managers should consider. You will be asked to defend your position at a "public meeting" within your classroom.*

SCENARIO: Students will play the part of people with vested interests in the management of campgrounds at Mount Rainier National Park. Park managers are considering the closure of some campgrounds because of recent rockfalls and small debris flows that threaten these facilities. Cougar Rock Campground and White River Campground are under consideration for closure.Thousands of tent campers, trailer, and motor home campers use these "front country" campgrounds every year.

1. ***Meeting moderator (a representative to the superintendent of the park)***
   The meeting moderator wants the opinions of geologists, emergency managers, visitors and community members before making a decision about closure of campgrounds. *(Teacher or student can play this role.)*

2. ***Park Advisory Board***
   Three to ten students can serve as members of the Park Advisory Board. This group listens to all opinions then deliberates and prepares a recommendation on campground closure and other actions to safeguard visitors.

3. ***Restaurant owner in Eatonville***
   He runs a restaurant in Eatonville that caters to Mount Rainier visitors. He has heard about lahar hazards and wants to learn more, but fears that education about hazards and park closures might scare visitors away.

4. ***A motor home visitor from Kansas City***
   This Missouri retiree has driven his large motor home to Washington for his first view of glaciers on Mount Rainier. He recently retired from a large manufacturing firm and spent a major part of his savings ($75,000) to purchase his motor home.

5. ***Backpacker from Yakima***
   She is a college student hiking the Wonderland Trail on summer break, fulfilling a lifelong dream. She intends to work as an environmental educator when she completes her schooling.

List Of Meeting Attendees continued...

6. ***Mountain climber from Germany***
   He has been climbing most of his life, and successfully climbed many major peaks of the European Alps. His schedule for climbing Mount Rainier is limited to four days.

7. ***Lodge employee working in the restaurant at Paradise***
   This is the summer between her high school graduation and college. She came to Mount Rainier to see the sights; however, she spends most of her summer waiting on cranky visitors.

8. ***Resort owner in Greenwater***
   This man runs The Firs, a family-owned log cabin resort on the banks of the White River. It has been a popular visitor destination for more than 80 years. His business depends upon the availability of visitors and upon the White River remaining within its channel.

9. ***Frequent camper at White River Campground***
   This nineteen-year-old enlisted man from Fort Lewis, spends as many summer weekends as possible camping with a group of buddies at White River Campground.

10. ***Ranger/campground host***
    She has been an employee of the National Park Service for five years. Closure of a campground will require her to change jobs.

11. ***Mountaineering guide***
    She is a first-year mountaineering guide on Mount Rainier. She is an experienced climber and collegiate athlete who took this job because she enjoys physical challenge.

12. ***Search and Rescue (SAR) employee***
    This Tacoma native has been involved in SAR since becoming an Eagle Scout in high school. He participated in a search last year for two children caught in a debris flow. Both children were found, but shaken by the experience.

13. ***Geologist***
    This geologist has been studying lahars as a consultant to Mount Rainier National Park and has an in–depth knowledge of the long record of debris flows and lahars in the park. He observed rockfall at the north end of Cougar Rock Campground during an earthquake many years ago, and witnessed a debris flow on Kautz Creek in 2001.

List Of Meeting Attendees continued...

14. ***Senator***
After serving on the Natural Resources subcommittee for ten years, this senator from Ohio decided to complete a fact-finding tour of western parks.

15. ***Tent camper from Yelm***
This family has been visiting Mount Rainier all their life and considers Mount Rainier as their private playground.