Dante's Peak Worksheet

1.Describe the volcanic projectile that likely killed Harry's wife in the opening scenes?
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2. What kind of sheet does Harry look at before he is sent to the area around Dante's Peak?
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3. What geologic event triggered the birds to fly off while the young couple was swimming?
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4. Research Question: How does a smoky quartz crystal form?
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5. Why is Harry looking at the pH readings of the lake?
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6. Research Question: Why does Carbon Dioxide kill trees and wildlife?
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7. Research Question: What does Sulfur Dioxide indicate about a volcano's activity?
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8. Why do the scientists place seismographs around the mountain?
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9. What purpose does E.L.F. serve for the scientists?
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10. What happens when the minor earthquake hits as Harry is trying to get E.L.F. to explore the volcano?
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11. What does Harry find in the town's water supply?
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12. What happens when Harry is addressing the town in the meeting?
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13. Is it realistic to believe that a town built on a volcano would be so poorly constructed? Why?
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14. Why can Harry's vehicle make it across the river?
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15. What causes the helicopter to crash as it is trying to help people escape?
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16. Why does that happen?
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17. What could be criticized about the people running around in the ash fall without ventilation?
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18. Why are Harry, Rachelle, and the family forces to evacuate the grandmother's house?
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19. Why are all the fish dying in the lake as Harry and his group escape?
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20. Research Question: Could volcanic activity cause such a dramatic change in a lake?
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21. What causes the dam to collapse?
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22. What does Harry try to drive the pickup across?
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23. What does Harry go after in his hotel room? Why (This answer will come later)?
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24. What are Harry and his gang trying to escape as they leave the town for the last time?
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25. Why does Harry need to trigger E.L.F. into action?
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Dante's Peak is an all-too-rare opportunity for you to enjoy a good adventure/"natural catastrophe" movie, and at the same time, get a feel for how geologists (and other scientists) work. You can also learn some science along the way. Of course, the writers, producers and directors did exercise quite a bit of artistic license in the movie, as they should; otherwise, our
heroes and heroines would have been killed off as soon as the action started! So, you will find some "scientifically imprecise" embellishments in the movie, and we find this quite understandable. We can think of no movie/television series that portrays scientific concepts and scientific practice as well as this flick does. As we said, our aim here is to point out the scientifically related plot elements that we think are accurate and realistic, and those wherein the writers stretched things a bit to make the movie exciting.
OK, let's get started:

The Movie is set in the Cascade Range of the Pacific Northwest, U.S.A. Dante's Peak is, of course, not a real Cascade volcano, and although Idaho (where some scenes are shot) is adjacent to states with Cascade Volcanoes (Oregon and Washington), and another state with an active magma chamber (Wyoming-magma exists under Yellowstone National Park), there are no Cascade (or any other active or dormant volcanoes) in Idaho (there is, however, plenty of
evidence of past volcanic activity, as there is in most parts of the world including many of the 50 United States). Anyway, as a keen observer has pointed out to us, the Mayor's Land Cruiser has a Washington State license plate, and Washington does have active volcanoes.

Wait! We need to start at the beginning (well, not exactly the beginning...):
When Volcanoes in the Cascade Range and Alaska erupt, they frequently do so explosively and produce pyroclastic flows, ash falls and "mud" or debris flows (lahars). According to the USGS, "Lahars destroyed houses, bridges, and logging trucks during the May 1980 eruption of Mount St. Helens, and have inundated other valleys around Cascade volcanoes during prehistoric eruptions. Lahars at Nevado del Ruiz volcano, Colombia, in 1985, killed more than 23,000 people." Near a volcano, the falling volcanic ash is quite heavy (high density), and the newspaper used as a proxy for volcanic ash in the movie looked more like snow (low density) as it fell. For geologists who have seen the movie, the hot, runny lava, seen issuing from the volcano, is the most bothersome issue. Generally, runny, fast-flowing lava (basalt) erupts from Hawaiian or "shield" volcanoes; but we understand that this makes for a more exciting movie. Lava flows at Cascade volcanoes are usually thick, and rarely move far from the vent (for example Mount St. Helens Dome: see the center photo at the top of this page: the dome is a mound of rather thick lava that has partially or wholly solidified) unlike the Hawaiian-type flows and lava fountains shown in Dante's Peak.

Strato-volcanoes like the Cascades do not usually produce pyroclastics and lava in the same eruption. Also, lava is VERY hot (over 1500 F), and most flammable material (rubber, wood, people) brought near the lava would burst into flame. The radiative heat alone is sufficient; flammable materials do not even have to touch the lava. We think a car would last only seconds on a lava flow before it would burst into flames, consuming the occupants. It is worth pointing out here that lava itself does not burn (most of the constituents of lava are already in their "most oxidized" state), and what we see burning around lava flows consists mostly of grass, houses, trees, shrubs, animals, etc.
We noticed that the lake near Grandmother's house becomes acidic quite fast in the movie, but hey, you need to pack a lot into a movie these days to draw a crowd. There are very acid lakes around volcanoes and yes, you would not want to swim in them... and yes metal parts can corrode.

This excerpt was taken From A Geological Guidebook to Dante's Peak written by Phil Candela and Phil Piccoli of the Laboratory for Mineral Deposits Research, Department of Geology, University of Maryland at College Park.