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Volcanic Smog

Volcanic Smog (VOG) is created when sulfur dioxide gas and other pollutants emitted from volcanic activity interact chemically with atmospheric moisture, oxygen, dust, and sunlight. VOG poses a health hazard by aggravating preexisting respiratory ailments and reducing driving visibility. Additionally, when atmospheric moisture is abundant, sulfuric acid dioxide gas in VOG combines with it and falls as acid rain. This can damage plants and crops and accelerate the rusting of metal objects such as cars, industrial and farm equipment, and building components. In certain areas, drinking water has been found to be contaminated due to lead leaching from acid rain, particularly where rooftop rainwater-catchment systems are used to provide drinking water. In recent years, efforts have been initiated to remove lead-bearing materials from these systems.

VOG exposure generally increases with altitude. VOG is most present from 300 ft. in elevation up to 6000 ft., with the area around 1000 ft. experiencing the most. Above 6000 ft., VOG begins to diminish rapidly. However, in Hawaii, with Kona (southerly) Winds, VOG can occur at sea level and can cover the entire island.

How to Prepare

1. **Stay informed** and understand VOG levels:
   - **Extreme**—Very reduced visibility, no visible horizon. Blue/grey tint to objects a mile or less in distance.
   - **Heavy**—Reduced visibility, horizon barely visible. Blue/grey tint to objects 3 miles away.
   - **Moderate**—Horizon is blurry. Blue/grey tint to objects 5 miles away.
   - **Light**—Horizon is almost sharp. Blue/grey tint to objects 10 miles away.
   - **No Vog**—Sharp horizon and there is little haze when viewing distant objects

2. Know advisory levels: *(visit http://www.hiso2index.info/assets/FinalSO2Exposurelevels.pdf or click on graphic for hyperlink to detailed chart)*

Good
Moderate
Unhealthy for Sensitive Groups
Unhealthy
Very Unhealthy
Hazardous
Data Not Available

3. Recognize reported VOG Related Symptoms:
   - Breathing difficulties
   - Induced asthma attacks, especially in adolescents
   - Increased susceptibility to respiratory ailments
   - Impeded ability of the respiratory tract to remove other potentially harmful particles
   - Headaches
   - Watery eyes
   - Sore throat
   - Flu-like symptoms
   - General lack of energy
   - Long-term effects are unknown

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What to Do to Minimize Risk of VOG Exposure and Health Issues

- Check air quality levels daily.
- As a family, **make a plan** so that everyone knows what to do and where to go.
- When possible, avoid high VOG level areas and stay indoors with windows and doors closed and sealed.
- Avoid physical activity such as brisk walking or exercising when VOG levels are high.
- Run an air conditioner or dehumidifier; both will condense water out of the indoor air and, in doing so, will remove the particulate sulfur compounds and acid gases from your indoor air.
- When using a fan, take a hand towel or a piece of cheesecloth, and saturate it with a thin paste of baking soda to neutralize the sulfur particles and water to remove the particles from the air. Drape the cloth over the face of the fan and turn the fan on at a low or medium speed. Keep the cloth damp at all times to ensure that it's most effective, but be very careful not to get the fan motor wet.
- Stay hydrated—This allows your body to clear particles from your lungs and flush inhaled sulfur compounds from your body.
- Refrain from smoking or tobacco use, particularly in heavy VOG.
- With high VOG level conditions, avoid contact with colds, flu, molds, mildew, pollen and dust, as immune system and lung function may be compromised.
- Listen to your body—If you find yourself being fatigued quickly, reduce your level of activity; if you start to have difficulty breathing, move to an area that is free of the irritating VOG; if your symptoms don't improve, get medical assistance ASAP.
- Follow your doctor's advice, keep your medication refilled, and use your daily controller medication as prescribed.
- If working or it is necessary to be outside for prolonged periods, wear a vinyl or rubber gas mask that is fitted with cartridges rated for acid gases and dust particulates. Ensure the mask is properly fitted to form a seal around your nose and mouth.
- **Build a Kit**
  - » As a family, build an emergency kit with enough supplies to sustain your family for at least three days.
  - » Include enough vinyl or rubber gas masks with cartridges rated for acid gases and dust particulates for each family member.
  - » Keep enough respiratory, asthma, and heart medications on hand.
  - » Place boxes of baking soda in your kit.

Where to Find Additional Information

- Hawaii State Department of Health—
  - » *http://hawaii.gov/gov/vog*
  - » *http://www.hiso2index.info/*
  - » *http://www.hiso2index.info/assets/FinalSO2Exposurelevels.pdf*
  - » *866-767-5044*
- U.S. Geological Survey Fact Sheet 169-97—*http://pubs.usgs.gov/fs/fs169-97/*
- University of Hawaii at Hilo—*http://www.uhh.hawaii.edu/~nat_haz/volcanoes/vog.php*