Health Effects of Short-term Volcanic SO_2 Exposure and Recommended Actions

Quantity of SO_2*		Air quality description	Recommended actions	
µg/m^3	ppm		Sensitive Groups **	Healthy individuals
		Good		
0-300	**0-0,1**	Poses little or no health risk.	Can experience mild respiratory symptoms.	No health effects expected.
		Moderate		
300-600	**0,1-0,2**	May cause respiratory symptoms in individuals with underlying diseases.	Caution advised. Follow SO_2 measurements closely.	Health effects unlikely.
		Unhealthy for sensitive individuals		
600-2.000	**0,2-0,7**	Individuals with underlying diseases likely to experience respiratory symptoms. Health effects unlikely in healthy individuals.	Avoid outdoor activities.	Health effects not expected. Heavy outdoor activities not advised.
		Unhealthy		
2.000-9.000	**0,7-3,0**	Everyone may experience respiratory symptoms especially individuals with underlying diseases.	Remain indoors and close the windows. Shut down air conditioning.	Avoid outdoor activities. Remaining indoors advised. Close the windows and shut down air conditioning.
		Very unhealthy		
9.000-14.000	**3,0-5,0**	Everyone may experience more severe respiratory symptoms.	Remain indoors and close the windows. Shut down air conditioning. Follow closely official advises.	Remain indoors and close the windows. Shut down air conditioning. Follow closely official advises.
		Hazardous		
> 14.000	**>5,0**	Serious respiratory symptoms expected.	Remain indoors and close the windows. Shut down air conditioning. Follow closely official advises.	Remain indoors and close the windows. Shut down air conditioning. Follow closely official advises.

*Based on 15-minute average

**Children and adults with pre-existing bronchial asthma, bronchitis, emphysema and/or heart diseases. These recommendations also apply to pregnant women.

General recommendations:

1. Individuals with pre-existing pulmonary- and heart diseases are encouraged to have their medications readily available.
2. Recommendations to reduce SO_2 in inhaled air:
   - Breathe with your nose as much as possible and avoid physical exercise.
   - Remain indoors and close the windows. Shut down the air conditioning if visible haze.
   - If you are staying inside and experiencing respiratory difficulties due to high SO_2, take a cloth and saturate it with a thin paste of baking soda and water (5 gram per liter of

water). Drape the cloth over the face of a fan and turn the fan on at a low or medium speed. The baking soda will neutralize the sulfur compounds and the moisture will help remove particles from the air. You'll need to keep the cloth damp at all times to ensure for this method to be as effective as possible. The use of a face mask or a cloth soaked in water mixed with baking soda (5 grams per liter) can also reduce the SO_2 in inhaled air. However, breathing through a soaked face mask/cloth can be difficult for fragile individuals.

- The use of a gas mask is the most effective way in reducing the SO_2 in inhaled air. Gas masks are however, not widely available and their use is not advised unless in circumstances where the SO_2 concentration is very high and also according to official recommendations.

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Based on information from the U.S. Department of the Interior, U.S. Geological Survey, Menlo Park, California, USA (http://hvo.wr.usgs.gov)