

ABSTRACT

Volcanic activities are prevalent in the Philippines being situated in the western region of the Pacific Ring of Fire. On January 12, 2020, the Taal Volcano, located in South Luzon, Philippines, suddenly erupted after 43 years of dormancy. The volcano released volcanic particles and gasses through a series of phreatic eruptions that affected nearby municipalities with reports of the volcanic ashes even reaching the Metro Manila area. These volcanic ashes may contain varying amounts of silicates, oxides, metallic compounds, acidic compounds, chlorides, fluorides and sulfates. Sulfates and fluorides are compounds that have a wide range of beneficial use to the ecosystem, however, in elevated levels, they may become toxic and harmful to living organisms. These compounds can easily mobilize and leach into soil and groundwater and can form into more harmful compounds. It is therefore the objective of this study to determine and analyze the sulfate and fluoride content in the $\leq 63 \mu\text{m}$ size fraction of volcanic ashes from the January 12-16, 2020 Taal Volcano eruption. Furthermore, it is the aim of this study to establish a baseline of fluoride and sulfate concentrations pre- and post-eruption using Total Suspended Particulate samples ($\leq 63 \mu\text{m}$) from different locations in Metro Manila. T-test will be used to determine if there is a significant difference between the concentrations of both sulfate and fluoride on the eruption date and the pre- or post- eruption dates in the ground level air of Metro Manila. The results of this study may provide information on the health implications of volcanic ashes caused by these two compounds to humans.