

Health Exposure Assessment of Sulfur Loading Operation

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Abstract : Sulfur Loading Operation (SLO) is an operation that poses risk of exposure to toxic gases such as Hydrogen Sulfid and Sulfur Dioxide during molten sulfur loading operation. In this operation molten sulfur is loaded into a truck tanker in a liquid state and the temperature of the tanker must maintain liquid sulfur within a 43-degree range — between 266 degrees and 309 degrees Fahrenheit in order for safe loading and unloading to occur. Accordingly, in this study, the e potential risk of occupational exposure to the airborne toxic gases was assessed at three sulfur loading facilities. The concentrations of toxic airborne substances such as Hydrogen Sulfide (H₂S) and Sulfur Dioxide (SO₂), were monitored during operations at the different locations within the sulfur loading operation facilities. In addition to extensive real-time monitoring, over one hundred and fifty samples were collected and analysed at internationally accredited laboratories. The concentrations of H₂S, and SO₂ were all found to be well below their respective occupational exposure limits. Very low levels of H₂S account for the odours observed intermittingly during mixing and application operations but do not pose a considerable health risk and hence these levels are considered a nuisance. These results were comparable to those reported internationally. Aside from observing the usual general safe work practices such as wearing safety glasses, there are no specific occupational health related concerns at the examined sulfur loading facilities.

Keywords : exposure assessment, sulfur loading operation, health risk study, molten sulfur, toxic airborne substances, air contaminants monitoring

Conference Title : ICWHS 2023 : International Conference on Workplace Health and Safety

Conference Location : Toronto, Canada

Conference Dates : September 18-19, 2023