



Measurement and Analysis of Welding Fumes

This project reviews the acute and chronic health issues faced by the welders and successful control strategies. The major health issues associated with welding are reported to be: respiratory problems; skin cancer; metal fume fever. From the literature survey carried out, it was found that respiratory issues are caused by particulate emission from the welding source, skin cancer by UV emitted from the welding arc and fume fever by exposure to Al_2O_3 , ZnO , and Fe_2O_3 emanating from the welding process. These adverse health effects can be effectively controlled by reducing the fume emission, evolved gas emission, and harmful radiations at the source itself. From the systematic literature survey, it was also found that reactive metal addition, nano-calcite addition, nano-alumina addition, titania addition, and composite coating can reduce these harmful effects to the welders. The addition and coating of reactive metals can bring tremendous changes in fume formation rate (FFR) and hexavalent chromium formation. Studies based on different elemental addition on the electrode flux and core wire are found to be scarce. Therefore, future studies in this specific area should address these problems directly.