PROPOSED RESEARCH

TITLE: Some Studies on the safety concerns in various types of composite manufacturing process and machining process.

The superior properties that offers by composite makes it to be used in many industrial applications, including aerospace, wind turbines, ships, cars, fishing rods, storage tanks, swimming pool panels, and baseball bats. Each application may require different combinations of reinforcements and matrices, which make the manufacturing safety even more challenging while working on these substances. In this study, safety issues in various types of composite manufacturing viz., polymer, metal, ceramic, nanocomposites and biocomposites going to address in detail with the possible hazards and the ways to eliminate those so as to maintain a good environment. In addition the safety concerns related to the machining of various types of composites are also investigated in detail and the latest developments are suggested for workers. The materials most frequently used in composite manufacturing, such as matrix (polyester, vinylester, phenolic, epoxies, methyl ethyl ketone peroxide, benzoil peroxide, hardeners, and solvents), and reinforcement materials (natural fibers, fillers, carbon, glass and kevlar fibers, honeycomb and foams) can be highly toxic to human body. These materials can also be very toxic to the environment when dumped out uncontrollably, creating major future health and environmental concerns. Throughout the manufacturing process, workers inhale vapors of the liquid matrix, hardeners and solvents / hinners, as well as reinforcement materials (fillers, chopped fibers and particles) in airborne. The safety measures to be followed are suggested in this research. Milling, cutting and machining of the composites can further increase the toxic inhalations of airborne composite particles, resulting in major rashes, irritation, skin disorders, coughing, severe eye and lung injury and other serious illnesses. The major portions of these hazardous materials generated during the composite manufacturing and machining can be controlled using appropriate personal protective equipment for the chemicals and materials used in composite manufacturing and machining. This research provides best possible safety practices utilized in composite manufacturing facilities for workers, engineers and other participants.