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RESEARCH FOR THE NFPA MISSION

Static Electricity Incident Review

Static electricity is the branch of electrical science dealing with the effects of the accumulation of electric charge. NFPA 77, Recommended Practice on Static Electricity, provides guidance on identifying, evaluating, and controlling static electric hazards for the purpose of preventing fires and explosions. Although this recommended practice originated in 1937 and has continuously evolved for the last several decades, static electricity incidents continue to occur.

The overall goal of this project is to identify, summarize, and analyze static electricity incidents from the years 2010 through 2020 to present and summarize circumstances of each incident and provide an assessment of the current provisions in NFPA 77, Recommended Practice on Static Electricity, and identify the existing knowledge gaps. This report will assist the NFPA 77 Technical Committee on Static Electricity.

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Summary Observations:

The purpose of this project is to identify, summarize, and analyze static electricity incidents over the years all the way through 2020 and summarize circumstances of each incident and provide an assessment of the current provisions in NFPA 77, with the aim of identifying existing knowledge gaps.

In analyzing the 89 incidents that were obtained through surveys and searching publicly available literature, gaps have been identified and are presented in this report. Various reason that resulted in these incidents collected were identified. Over 20% of the cases studied identified negligence as the main reason. Poor maintenance, inappropriate method of handling solids, powders, waste liquids, flammable liquids, inappropriate method of transportation and inadequate bonding and grounding were identified as other reasons.

In addition, three suggestions were identified for future work. The first main suggestion is on the need for more education around NFPA 77. Many of the cases analyzed occurred not because of lack of guidance in NFPA 77, but rather a lack of awareness of the guidance, or inappropriate application of the guidance. More work is needed to spread awareness about NFPA 77. The second main suggestion is the expansion of Chapter 17 in NFPA 77 to include more guidance on how to proceed when using coaters to limit the appearance of static sparks. The final suggestion is the creation of a live database of incidents, in the model of the one used in this report and presented in Appendix A, to gather information on future incidents and to be able to analyze if education around NFPA 77 decreases incidents in specific categories.