Common Causes and Corrections for Explosions and Fires in Improperly Inerted Vessels

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ABSTRACT

Causal factors and corrective actions surrounding improperly inerted vessel incidents are developed and compared. Several case studies of flash fires or explosions involving these improperly inerted process vessels are utilized for the development. In industry, vessels that contain or have contained flammable vapors are commonly inerted for many reasons but one of the most common is explosion prevention. Common inerting gases are carbon dioxide, nitrogen, steam and air depending upon the specific application. Causes ranged from procedures to design issues, but a general set has been produced for application to the problem of explosion prevention in process vessels. Each case study is compared to safety standards to show how safe work practices could have prevented the accidents, but rigid adherence to safety standards may not be sufficient to prevent an accident. The application of a safety standard should be tempered by the situation-specific circumstances. Some specific recommendations for preventing explosions include methods for improved mixing of the inert gas, the use of blinds, filling the vessel with water, improved work procedures and improved monitoring procedures.