ABSTRACT

The recent publication by the U.S. Chemical Safety Board (CSB) concerning its findings on the Concept Sciences Inc. (CSI) incident involving hydroxylamine (HA) has raised issues with regard to safe production of HA. This CSI incident was followed by another incident that destroyed the Nissin Chemical HA plant in Japan, and today BASF is the sole commercial producer of HA. HA is an important solvent in the pharmaceutical industry and is used as an etching agent in the semiconductor industry.

This paper discusses a Quantitative Risk Assessment (QRA) of a generic HA production plant, which integrates the findings of the CSB report and the knowledge of potential HA reactivity hazards based on research at the Mary Kay O'Connor Process Safety Center. The intent is to highlight safety concerns and major risk factors in the production and handling of HA and to provide risk assessment guidelines for potential manufacturers. These guidelines are also applicable to the production strategies for other hazardous chemicals.