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**Summary of Process Safety-Related Research
at Michigan Technological University**

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ABSTRACT

The Hazards Laboratory at Michigan Tech is currently focusing on three research areas: flammability, reactivity and safety during conceptual design.

In the area of flammability, the laboratory supports a 20-liter combustion sphere, flashpoint equipment, and an autoignition temperature tester. The automated 20-liter sphere is being used to determine the flammability zone for gases in mixtures of fuel, oxygen and nitrogen. These data will help confirm current flammability prediction methods and flammability limit mixing rules. The flashpoint apparatus is being used to obtain flashpoint data on liquid mixtures that exhibit minimum boiling point azeotropes.

The hazards laboratory supports an ARC and an RSST (Reactive Systems Screening Tool) for studies on reactivity. These studies will help determine new ways to represent reactivity using

thermodynamic availability.

In the conceptual design area, new software tools are being developed to assist the design engineer to make decisions regarding process safety during conceptual design. This includes the Dow Fire and Explosion and Chemical Exposure Indices, and other software tools on reliability and failure modes.

This talk will briefly discuss these areas, and present some of the more significant results.

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