Special Issue

The Lifecycle Safety and Risk Management of Hydrogen Energy Infrastructure

Message from the Guest Editors

Hydrogen (H2) has been recognized as a promising energy alternative that could help combat climate change, environmental pollution, and energy crises. However, its hazardous physicochemical properties and demanding operational conditions pose substantial challenges in ensuring its safety and effective risk management. The purpose of this Special Issue is to provide an overview of the safety and risk management of hydrogen energy infrastructure throughout the production, storage, transportation, and utilization of hydrogen. Their research areas may include (but are not limited to) the following:

- Risk identification and communication;
- Risk assessment methodologies;
- Technical safety measures;
- Inherently safer design principles;
- Accident prevention through design strategies;
- AI-based safety–risk perception;
- Predictive accident analytics;
- Safety monitoring technologies;
- Emergency response strategies;
- Regulatory frameworks for hydrogen safety;
- Safety integration in design and operation stages;
- Decommissioning and end-of-life safety considerations;
- Continuous safety improvement through lifecycle feedback.

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I encourage you to contribute a research or comprehensive review article for consideration for publication in *Sustainability*, an international Open Access journal which provides an advanced forum for research findings in areas related to sustainability and sustainable development. *Sustainability* publishes original research articles, review articles and communications. I am confident you will find the journal contributes to enhancing understanding of sustainability and fostering initiatives and applications of sustainability-based measures and activities.

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