ChE book review

Trevor Kletz Compendium: His Process Safety Wisdom Updated for a New Generation

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The introduction to *Trevor Kletz Compendium: His Process Safety Wisdom Updated for a New Generation* presents an overview of the life and accomplishments of Professor Trevor Kletz, one of the pioneers of process safety thinking and practicum. Upon my completion of this introduction, I felt somewhat embarrassed to admit that, while I was familiar with the outcome of Prof. Kletz's work, I had never heard mention of him specifically prior to reviewing this textbook. A quick and informal poll of several other chemical engineering educators from the United States led me to believe that perhaps Prof. Kletz was a more well-known figure in the United Kingdom and Europe. As such, the authors' expressed goals for the text are well founded, as their work seeks to synthesize the two decades of Prof. Kletz's writings and present them as a coherent thesis on best practices in process safety with updated information since Prof. Kletz's last publication in 2003.

The general structure of the book highlights critical areas of Prof. Kletz's safety philosophy, with chapters on performing **HAZOP** safety analysis and **HAZAN** risk analysis, design choices that lead to **Inherent Safety** of processes, the risks associated with **Maintenance**, and effective **Management of Change**. Throughout each chapter, the authors construct their own narrative but use frequent text boxes from Prof. Kletz's writings or other sources to supplement their points. Each of these main content chapters are structured similarly, beginning with a definition of the chapter's main topic as Kletz saw it with other supplemental definitions. The chapters tend to then discuss potential safety issues related to these topic areas and strategies to assure safety concerns are properly addressed. These strategies can get specific as well, including approaches for preparing confined spaces for human entry and issues related to the use of design contractors who are incentivized to cut costs. The authors will frequently supplement Kletz's points with additional information about modern safety standards, keeping the book contents relevant. This structure is very coherent, and the key points of each chapter are made and supported well. As presented by the authors of this text, Kletz's writing style is engaging, using personal anecdotes to make key points.

The authors also supplement writings with images and illustrations that support points made in the text, particularly in the contexts of designs to minimize human error or risks during maintenance. Periodic "Adventures of John" comic strips from Kletz's original works are used to illustrate the authors' main points. The text uses standard safety vocabulary throughout, providing the reader with a good baseline language for discussing issues related to process safety.

The final chapter is of particular note as it is unique in the context of the book and other process safety texts. Rather than discuss a safety-related design or operation strategy, it exposits on the numerous missed opportunities and limitations related to **Accident Investigations** after a process safety failure has occurred. This chapter examines aspects of human psychology and historical trends that contribute to the perpetuation of similar safety mistakes that continue to cause incidents to this day. While the chapter does not dive especially deeply into strategies that could circumvent these shortcomings, the information provided in this chapter is useful and thought-provoking, challenging the ways our profession learns from past mistakes and offering a worthwhile ending discussion for the book.

Periodically, the authors will include summaries of topically relevant industrial accidents to support their points in the mold of Kletz's strategy to tell process safety stories to engage readers. Some of these include Kletz's writings on these cases, but newer disasters such as Deepwater Horizon are also mentioned. While the brief cases can expand the readers' understanding of how global these incidents are, when they are used too frequently in some chapters it can be a bit disorienting on first read. While the realistic support is useful for communicating reasons for specific safety interventions, the case study presentation is on occasion jarring when a short case is mentioned in the middle of an expository section. Still, these asides do provide useful context for the reader and offer avenues for further research at the readers' discretion.

Additionally, since this text is primarily a compilation of writings, there are no practice or comprehension problems presented. While these problems are beyond the book's intended scope, it is a point worth noting to any instructors seeking to adopt this book as the primary reference text for a course intended to teach safety design and the related calculations.

Despite these minor issues, this book ultimately succeeds at its goal to present the teachings of Prof. Kletz to a new, modern audience. The main selling point of this book is the collection and synthesis of Prof. Kletz's writings and recommendations, and these pieces are supplemented by information relevant to the practice of process safety today. Ultimately, I feel this textbook is a good reference for those interested in communicating the thought and intention behind process safety philosophies. I am more hesitant to recommend use of this book as the primary textbook for a process safety or design course, particularly those that rely on more technical process safety and design calculations, as teaching those specific skills is not in the purview of this text. With that said, I intend to use this book as a reference for future safety and professional practice courses I teach, and I have already recommended it to several colleagues with similar teaching interests. ❐