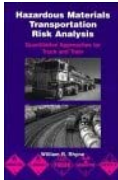


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### Book Description

Publication Date: **July 15, 1994** | ISBN-10: **0471285544** | ISBN-13: **978-0471285540** | Edition: **1**

How can we predict and control risks related to the transportation of hazardous substances? This book explains what a transportation quantitative risk analysis is, how to communicate risk study objectives to an experienced risk analyst, and how to do a reasonably detailed calculation based on available risk data. The author explains the quantitative risk analysis (QRA) procedure and its application to transportation. He familiarizes readers with sources of data specific to accident rate, probabilistic distribution of accident force magnitude, and conditional probability of container failure. Risk analysis methodologies and data uncertainties are also clearly explained. A special feature of the book is an extended example of a quantitative risk analysis for bulk transport of chlorine by truck and train. This detailed example explores every step of the QRA from preliminary hazards analysis to risk reduction alternatives. This example can be adapted to many practical situations. Methodologies are provided for accident scenario development, frequency and consequence analysis, and risk presentation. The book has in-depth discussions of

- \* Definitions of basic risk analysis terms
- \* Mathematical formulations for transportation quantitative risk analysis
- \* Databases for accident rate and frequency, accident force types and magnitudes, container failure probability, and release amounts
- \* Engineering models for container failure analysis
- \* Quantification of the risk reduction of modifying container design
- \* A generalized fault tree that can be easily modified for different types of transportation risk analysis

The discussion of consequence analysis delves into release rates and amounts, airborne dispersion, toxic material effects, exposed populations, and exposure mitigation measures. Analysis results for both individual and societal risks are discussed. Appendices cover numerical evaluation of train and truck accident scenario frequencies and source term characterization. Hazardous Materials Transportation Risk Analysis will be a valuable reference for supervisors and managers who ship, receive, or transport hazardous materials: state, federal, and local transportation officials; transportation packaging engineers; and others, such as emergency planners and environmental analysts, who have reason to understand transportation risk

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### About the Author

About the Author WILLIAM R. RHYNE, D.Sc., is Vice President of H&R Technical Associates, Inc., in Oak Ridge, Tennessee.

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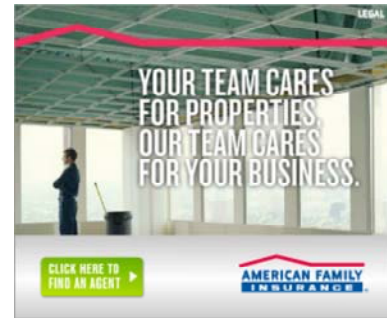
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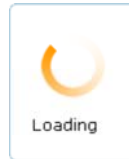
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