

# Hazardous Materials Chemistry For Emergency Responders Second Edition

Authored by Robert Burke, HazMat Teams Across America contains the history of selected hazardous materials incidents over the past 100 years and features 30 different HazMat Teams from departments across the United States. Information on equipment innovations are also included. Mr. Burke is a contributing editor for Firehouse Magazine with a bi-monthly column titled Hazmat Studies, and a contributor for Firehouse.com website with two columns titled "Street Chemistry" and "Hazmat Team Spotlight". He has been an adjunct instructor at the National Fire Academy for 20 years and has over 28 years experience in emergency services as a career and volunteer firefighter and is currently the Fire Marshal for the University of Maryland Baltimore Campus.

"Written in the same clear, concise style that made the previous editions bestsellers, this book provides easy to understand chemistry for responders to use to handle hazardous materials emergencies on a daily basis. It provides the fundamentals of "street chemistry" that emergency response personnel need to know, with a focus on hazmat elements. This edition includes new review questions with answers and new incident examples. It also introduces the new United Nations GHS system for classification and labeling of chemicals, updates the NFPA requirements, and provides

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information on ethanol and other alternative automotive fuels"--

This revised fourth edition has been thoroughly updated to fully address the specific needs of firefighters and other professionals who deal with hazardous materials. This volume encompasses the key aspects of safely handling hazardous materials and the response actions to be implemented during terrorist actions, hazardous transportation mishaps and other disasters. This volume examines some features of matter and energy, flammable gases and flammable liquids, chemical forms of matter, as well as the principles of chemical reactions, aspects of the dot hazardous materials regulations, the chemistry of common elements, corrosive materials, water-reactive substances, toxic substances, oxidizers, hazardous organic compounds, polymeric materials, explosive materials and radioactive materials. For emergency responders, firefighters and others potentially involved with hazardous materials.

Hazardous Waste Operations and Emergency Response Manual & Desk Reference is a straightforward reference and training source designed to provide the site safety and health professional with a comprehensive guide to responding to emergencies involving releases or potential releases of hazardous substances. Important topics are discussed such as: Toxicology, Sampling and Analysis, Personal Protective Clothing, Chemical Incompatibility, Decontamination, Labels, Placards, and Other Identification, and Site Investigation, Control, and Emergency Response. Designed along the lines of 29CFR 1910.120 (Hazardous Waste Operations and

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Emergency Response regulation), this manual covers the training requirements of managers, supervisors, and professionals (engineers and scientists) involved in hazardous waste site operations and includes all topics covered in the OSHA-required 40-hour training course. The CD-ROM contains the book on PDF as well as the NIOSH Chemical Database for 2002. There are blank forms such as: site health and safety plans, checklist, worksheets, sample MSDS sheets, accident report forms, and site visit forms. The CD also includes sample questions, practice exams and practical field exercises. Response to Hazardous Materials incidents has changed over the years. If one was a First Responder 20-30 years ago, one had to be concerned about transportation accidents involving hazardous cargoes, fires and hazardous materials and wastes at fixed sites. While many of us were trained in the basics of Weapons of Mass Destruction, it was generally theory and few expected to have to actually respond to an incident involving these materials. Responses to Clandestine Laboratories were not as common and terrorism was something that happened elsewhere and not in the United States. Today the world is a very different place: -The drug epidemic especially for methamphetamine has virtually overwhelmed the Law Enforcement and Response Community. First Responders, whether Law, Fire or EMS personnel frequently encounter "Meth Labs" even in "nice neighborhoods" or in rural settings. "Harder" drugs and synthetic opioid labs are being run by gangs in many states and television shows and popular music about drug makers, dealers and "kingpins" are

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common. -Clandestine laboratories related to "terrorist" activities are now common throughout the world and there are numerous examples of "homemade" toxins and explosives being made here in the United States. It is possible to buy books discussing the "kitchen counter" preparation of explosives, toxic agents and chemical warfare agents openly on the internet. Anyone with an internet account can access step-by-step instructions and watch videos showing exactly how to construct bombs, etc. to attack unsuspecting populations. Organizations such as al Qaeda or the "Islamic State" are actively pushing to give this type information to the widest possible audience. -Although there have been relatively few successful chemical or biological attacks in the US, the use of chemicals in association with improvised explosive devices is common elsewhere in the world and there have been a number of relatively unsuccessful attempts here ranging from improvised explosive devices found attached to chemical canisters to explosive devices planted on trucks and railway cars. Few people in the Emergency Planning Community believe that this unfortunate trend will not strike here soon. This book is intended to prepare the Emergency Response Community to respond safely to these new threats. We all hope that the next "call" won't be to respond to one of the problems discussed in this book. Preparing to make that Response is what this book is about.

The first thing the reader will notice about this book is that the chemistry in it is "hands-on" chemistry they can use everyday. Written specifically for response

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personnel, Hazardous Materials Chemistry for Emergency Responders covers all hazards for chemicals, including multiple and "hidden" hazards. [This book] explores basic principles of chemistry and toxicology so first responders can efficiently identify a chemical hazard, anticipate potential outcomes, and make safe and informed decisions. -Back cover.

Written by a hazardous materials consultant with over 40 years of experience in emergency services, the five-volume Hazmatology: The Science of Hazardous Materials suggests a new approach dealing with the most common aspects of hazardous materials, containers, and the affected environment. It focuses on innovations in decontamination, monitoring instruments, and personal protective equipment in a scientific way, utilizing common sense, and takes a risk-benefit approach to hazardous material response. This set provides the reader with a hazardous materials "Tool Box" and a guide for learning which tools to use under what circumstances. Volume One, Chronicles of Incidents and Response, takes an in-depth look at the history of hazardous materials response, points out lessons learned from these incidents, and discusses the impact on our response today. Volume Two, Standard of Care and Hazmat Planning, presents the hazardous materials legal issues and background on the Hazmat Standard of Care, including incidents where Care was violated and the repercussions felt. Volume Three, Applied Chemistry and Physics, presents chemistry and physics at the level that emergency responders will understand so they can apply the concepts using a risk

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management system and deal safely and effectively with hazardous materials incidents. Volume Four, Common Sense Emergency Response, covers stabilization and includes science and risk analysis and the part it plays in a successful outcome of the stabilization portion of the response. Volume Five, Hazmat Teams Spotlight, covers the history, vehicles, types of response, equipment, and resources, as well as procedures and innovations across different teams nationwide.

Editor-in-Chief, Dr. Gregory Ciottone, and Associate Editors, Dr. Philip D. Anderson, Dr. Erik Auf Der Heide, Dr. Robert G. Darling, Dr. Irving Jacoby, Dr. Eric Noji, and Dr. Selim Suner, recognized worldwide as authorities in the field, bring you this brand-new reference, which offers comprehensive yet succinct guidance on the preparation, assessment, and management of a full range of disasters, both natural and man-made (including terrorist attacks and the threat of biological warfare). More than 200 contributors carefully outline the basics of disaster management and provide guidance on more than 100 specific disaster situations. Part 1 offers an A to Z source for information on every aspect of disaster medicine and management. Part 2 features an exhaustive compilation of every conceivable disaster event, organized to facilitate fast reference in a real-time setting. The second part of the book also serves as a quick consult on disaster medicine. Presents a full range of coverage from the basics of disaster medicine to more advanced concepts, such as tactical EMS, hazard vulnerability analysis, impact of disaster on children, and more. Discusses

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identification of risks, planning of organization and equipment, and education and training. Includes individual Concepts and Events sections that provide information on the general approach to disaster medicine and practical information on specific disasters. Offers comprehensive coverage of natural disasters, accidental disasters, transportation disasters, and intentional events. Includes an exhaustive list of chapters on the conceivable chemical and biologic weapons known today. Features a practical chapter organization throughout that covers description of event, pre-incident considerations, post-incident considerations, medical treatment of casualties, unique considerations, pitfalls, case presentations, and suggested reading. Discusses the management of future events, or possible scenarios, for which there is no precedent.

The modern definition of firefighter no longer means “putting the wet stuff on the red stuff.” Emergency responders answer incidents ranging from fire alarm activations to elevator rescues and medical emergencies more often than full-blown fires. Consequently, responders increasingly interface with a wide array of building systems. Underscoring the changing role of firefighters, *Fire Protection: Systems and Response* presents the basic knowledge of the inner workings of fire safety/fire protection systems and related equipment in buildings. The author provides a straightforward overview of the functions and benefits of these systems and how they can assist with fire suppression, code enforcement, alarm response, and elevator rescue. The book’s comprehensive discussion of elevators, fire

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command centers, emergency generators and lighting, and HVAC systems sets it apart from other fire protection books currently available. The topics covered prepare emergency response personnel for the challenges they face working with fire protection systems, fire alarm systems, and elevators. Logically organized, clearly written, and covering all systems in a single text, this presentation of information streamlines fire service interaction with building features and fire protection systems. Providing an understanding of how systems are designed and installed, the book is also a reference for troubleshooting fire protection problems in the field. The information not only gives responders an appreciation/knowledge of how the systems work, but helps them use this knowledge to perform their job better.

The second edition of a bestseller, Hazardous Materials Chemistry for Emergency Responders continues to provide the fundamentals of "street chemistry" required by emergency response personnel. The information presented will assist you in responding to specific chemical spills, including identifying the exact chemicals involved and their individual

An unbeatable reference set at an unbeatable price! The Hazardous Materials Library Package contains everything you need to understand Hazardous Materials and Explosives basics. Made up four leading books from Delmar, this set should be on the shelves of every emergency services response unit in the country. The package includes Explosives Identification Guide, Hazardous Materials Incidents, 2E, Hazardous Materials

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Field Guide, and Hazardous Materials Chemistry.

Delmar is a part of Cengage Learning.

A condensed summary of key information taught in Hazardous Materials Chemistry classes.

Every day, people are faced with critical, life-threatening situations - in times of trouble, who can help? In this title, readers will get to know the hazmat technicians who arrive on the scene of a toxic threat. Chapters highlight the nine classes of hazardous materials as well as the training, tools, and knowledge hazmat technicians need to save lives and property due to a nuclear radiation emergency, a chemical spill, or a contaminated area. An interview with a real-life hazmat professional provides insight into what makes the worst days bring out their best. From the research team to the decontamination team, the stories of these Emergency Workers will keep young readers on the edge of their seats. Aligned to Common Core Standards and correlated to state standards. Abdo & Daughters is an imprint of Abdo Publishing, a division of ABDO.

The most comprehensive and convenient guide to date on the management, storage, and disposal of hazardous materials and waste. For the professional faced with making sense of the reams of governmental regulations surrounding waste handling and disposal from the EPA, OSHA, and the Nuclear Regulatory Commission, untangling the legal jargon can be as challenging as managing these materials and wastes. Explaining how these complex regulations interrelate and when they apply, the first edition of Hazardous Materials and Hazardous Waste Management became an instant

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reference staple-offering practical, comprehensive guidance on current definitions of hazardous wastes and materials as well as their use, management, treatment, storage, and disposal. Extensively revised and expanded with many new topics, this new Second Edition now covers additional areas such as water quality management, pollution prevention, process safety management, and transportation of hazardous materials and waste. Retaining its predecessor's practical topical range, this edition is invaluable for the chemical and environmental engineer as well as the hazardous materials technician, with essential information on: Hazardous materials management in the workplace, from personal monitoring and protection to safety and administration. Treatment and disposal technologies. Environmental contamination assessment and management, including groundwater and soil, air quality, water quality, and pollution prevention. Process safety management, hazard assessment, emergency response, and incident handling. The first book to provide coherent treatment of both hazardous materials and waste management in one volume, the Second Edition of Hazardous Materials and Hazardous Waste Management secures this reference's well-earned position in the professional's library as a source of solid, timely technical information.

With the increasing availability of biological and chemical materials, the threat of terrorism grows daily. Innocent bystanders -the major targets of terrorists because they gain the most publicity - create a vast number of potential victims. In our changing world, horrendous

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violence has become commonplace. The growth of incidences involving chemical and biological agents has created a need for local response teams to be aware of the dangers they face. *Emergency Response to Chemical and Biological Agents* serves as a training manual for emergency responders who handle incidents involving biological and chemical hazardous materials. The author covers poisons such as nerve, blood, blister, and choking gases and biological agents such as anthrax, typhus, and cholera. Using examples ripped from the headlines, he explains what is and is not a terrorist act, and the difference in handling each incident. In addition the author explains the standard operating procedures of Hazardous Materials Teams before, during, and after an incident. Whether terrorist act or chemical spill, local responders usually reach the scene first. As these incidents multiply - and they will - these teams will need a blueprint for dealing with chemical and biological materials. *Emergency Response to Chemical and Biological Agents* provides a clear, concise plan of action for responding to these incidents.

This book is a glossary of terms useful to responders to emergency situations. Section I includes terms common in matters relating to hazardous materials, chemistry, the environment, firefighting, EMS, protective clothing, radioactivity, chemical warfare agents, and other emergency topics. Section II is a comprehensive list of abbreviations and acronyms that relate to the topics covered in the first section.

"Designed to provide rapid access to critical emergency information at the scene of a release of chemical or

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biological warfare agents, this handy field guide is also ideal for facilitating the coordination with off-site personnel who have access to Ellison's larger Handbook. It differs from its larger companion, however, in that agent specific data, as well as information on evacuation distances, are listed in table format, making it the ideal tool for emergency responders deployed in the field."--BOOK JACKET.

This book is a guide to Hazardous Materials Emergency Response. It combines a fundamental Chemistry text with specific information on the hazards associated with each class of molecules and recommendations on the safe response to incidents involving these materials including recommended Personal Protective Equipment, Monitoring, Decontamination and Cleanup. The topics covered include chemical theory applied to each type of molecule and discussions of toxicity, flammability, reactivity and environmental issues. In addition to the "normal" Hazmat chemicals, there is a significant coverage of chemical, biological and radiological response to terrorism and Weapons of Mass Destruction. ALERT: Before you purchase, check with your instructor or review your course syllabus to ensure that you select the correct ISBN. Several versions of Pearson's MyLab & Mastering products exist for each title, including customized versions for individual schools, and registrations are not transferable. In addition, you may need a CourseID, provided by your instructor, to register for and use Pearson's MyLab & Mastering products. Packages Access codes for Pearson's MyLab & Mastering products may not be included when

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purchasing or renting from companies other than Pearson; check with the seller before completing your purchase. Used or rental books If you rent or purchase a used book with an access code, the access code may have been redeemed previously and you may have to purchase a new access code. Access codes Access codes that are purchased from sellers other than Pearson carry a higher risk of being either the wrong ISBN or a previously redeemed code. Check with the seller prior to purchase. -- &>HAZARDOUS MATERIALS TECHNICIAN is the only dedicated, up-to-date text to cover all key concepts, principles, and hands-on techniques associated with effective hazardous materials response. Organized to follow the logical progression of a hazmat response, it offers detailed explanations and examples addressing regulations and standards, toxicology, chemistry, information resources, PPE, air monitoring, sample identification, containers, damage assessment, product control, decontamination, ICS, response organization, and much more. Detailed step-by-step procedures are provided throughout, and complemented with online visual walkthrough guides to performing complex procedures. Historical incidents are presented for context, and response considerations for commonly encountered incidents are thoroughly discussed. Solved exercises show students how concepts are applied in realistic response scenarios, and review questions enable students to test their knowledge of each key technique. This ValuePak contains Weber: Hazardous Materials Technician, 1/e (ISBN: 0131720198) and Resource Central Fire Student Access

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Code Card (ISBN: 0132816024). MyBradyKit/Resource Central is an online resource that offers a wealth of tools to help student learning and comprehension, including quizzes, audio glossaries, scenarios, links, videos and animations, and more. MyBradyKit/Resource Central also includes a full suite of supplements just for instructors, including Instructor Resource Manuals, Test Banks, and PowerPoint slides. All you need for student SUCCESS and program management is found inside MyBradyKit.

Written by a hazardous materials consultant with over 40 years of experience in emergency services, the five-volume *Hazmatology: The Science of Hazardous Materials*, suggests a new approach dealing with the most common aspects of hazardous materials, containers, and the affected environment. It focuses on innovations in decontamination, monitoring instruments, personal protective equipment in a scientific way utilizing common sense, and takes a risk-benefit approach to hazardous material response. This set provides the reader with a hazardous materials "Tool Box" and a guide for learning which tools to use under what circumstances. Dealing with hazardous materials incidents cannot be accomplished effectively and safely without knowing the effects these materials have. Volume Three, *Applied Chemistry and Physics*, is not about teaching chemistry and physics. It is about presenting these topics at the level that emergency responders will understand so they can apply the concepts using a risk management system. **FEATURES** Uses a scientific approach utilizing analysis of previous

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incidents Offers a risk-benefit approach based upon science and history Provides understanding tools for your Hazmat Tool Box Simplifies physical and chemical characteristics Utilizes chemistry & physics to identify hazards to responders

A guide for students and professionals in the field, offering information on chemical properties of hazardous materials and wastes; legal requirements for handling, storage, transportation, and disposal; and essentials of managing hazardous materials and wastes for protection of employees, facilities, and communities. Includes bandw photos and diagrams, real-life examples of policies and legal instruments, checklists, and tables. Suggested readership includes environmental health specialists, corporate employees, attorneys, engineers, students, and laypeople. Annotation copyrighted by Book News, Inc., Portland, OR

The second edition of a bestseller, Hazardous Materials Chemistry for Emergency Responders continues to provide the fundamentals of "street chemistry" required by emergency response personnel. The information presented will assist you in responding to specific chemical spills, including identifying the exact chemicals involved and their individual hazards. The chapters are organized by the nine U.S. Department of Transportation's hazard classes. Within each class, the author discusses individual chemicals that are commonly involved in

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emergency situations along with their physical and chemical characteristics. Additionally, each chapter addresses the multiple perils of hazardous materials, including "hidden" hazards. The top 50 hazardous industrial chemicals are considered throughout the book, together with other hazardous materials. The author also provides incident reports and statistics to underscore the effects that specific chemicals can have on incident outcomes. Furthermore, he delves into the timely concern of dealing with chemical and biological terrorist agents. This information is extremely valuable in your daily work for the health and safety of yourself and those who rely on you. Hazardous Materials Chemistry for Emergency Responders, Second Edition offers a concise presentation of the topics of most importance. The subject matter is written to be appropriate for response personnel without a strong chemistry background by conveying the information in understandable terms. This book will familiarize you with the basic chemistry a responder needs to understand chemical terminology and communicate with others about the chemicals involved in hazardous materials incidents.

What do the World Trade Center, Atlanta Olympic Park, Oklahoma City , and the chemical attacks in Japan have in common? They are all terrorist attacks. While "It can't happen here" is still a common mind-set, chemical and biological agent

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attacks, bombings, nuclear devices, and incendiary devices can indeed happen in any community. The resulting loss of life and disruption of lifestyle caused by these potential incidents is too great to ignore. Where ever and however the attacks occur, it is the local emergency responder who has to answer the call, provide security to the site, give aide to the wounded and, in some cases, literally put out the fire. Counter-Terrorism for Emergency Responders suggests that while these chemical attacks are not unlike other types of hazardous materials incidents, they also include additional special circumstances. With the information in this book, emergency response teams will be prepared to handle all types of hazardous materials and effectively deal with chemical and biological agents. In providing step-by-step instructions for recognition and identification procedures, this book explores security and isolation zones, as well as the use of protective equipment and decontamination procedures. Counter-Terrorism for Emergency Responders guides those who are responsible for providing aid and comfort to the victims at terrorist sites, whether foreign or domestic. This includes emergency medical responders, firefighters, and police.

Text only. This product does NOT include a Resource Central Access Code Card. To purchase the text with a Resource Central Access Code Card, please use ISBN: 0-13-295618-7 HAZARDOUS

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MATERIALS TECHNICIAN is the only dedicated, up-to-date text to cover all key concepts, principles, and hands-on techniques associated with effective hazardous materials response. Organized to follow the logical progression of a hazmat response, it offers detailed explanations and examples addressing regulations and standards, toxicology, chemistry, information resources, PPE, air monitoring, sample identification, containers, damage assessment, product control, decontamination, ICS, response organization, and much more. Detailed step-by-step procedures are provided throughout, and complemented with online visual walkthrough guides to performing complex procedures. Historical incidents are presented for context, and response considerations for commonly encountered incidents are thoroughly discussed. Solved exercises show students how concepts are applied in realistic response scenarios, and review questions enable students to test their knowledge of each key technique.

Every practicing environmental engineer should already have a firm grasp on the basics of hazardous waste site remediation—the key to confronting a site problem, and devising an effective solution. Since their original introduction to remediation, technology has kept moving ahead with new ideas and procedures. Fundamentals of Hazardous Waste Site Remediation gives

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environmental professionals immediate access to the basics of the trade, along with information about recent advancements. This comprehensive overview examines the basics of such areas as hazardous materials chemistry, hydrogeology, reaction engineering, and clean-up level development. A chapter on Cost Estimating will be of particular interest to specialists, in light of recent concerns about the increased costs of remediation. After reading each chapter, test your new knowledge with the review problems. As a refresher guide for career environmental engineers, or a helpful tool to newcomers in the field, Fundamentals of Hazardous Waste Site Remediation is a valuable resource for longtime professionals and newcomers alike. This report examines the challenges of advancing the use of electronic shipping papers as an alternative to the current paper-based hazardous materials communication system. Paper copy hazardous materials shipping papers have several drawbacks: they are labor intensive and subject to human error; they are perishable and may not be available to emergency responders in the event of an incident; and they are difficult to exchange between modes or different vehicles within a mode. The use of internationally compatible electronic data-sharing technologies could significantly improve the exchange of hazardous materials shipping information among shippers, carriers, regulatory

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agencies, and emergency responders. Timely access to accurate hazardous materials shipping information will likely reduce errors in information exchange, improve efficiency, enhance security, and improve the response efforts in the event of a hazardous materials incident.

This workbook/exam is designed to comply with occupational safety and health administration, hazardous waste operation, and emergency response requirements. This workbook/exam is not designed to replace the forty-hour hazardous materials technicians' training manual, but it is designed to highlight and to enhance the areas that are important for example, hazardous materials, chemistry, toxicology, hazardous waste management, the selection of personal protection equipment, confined space entry, emergency response, and decontamination procedures. This workbook/exam is the test that goes hand in hand with the "Hazardous Materials Technician" training manual. This workbook/exam will cover the simple fact that most regulations are enforceable by law, while standards will promote "Safe Work Practices," along with the importance of proving a safe work environment for our workers. This workbook/exam will also give the reader the ability to understand the difference between emergency response, remediation, and the treatment the storage and the disposal of hazardous waste.

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This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. Text only. This product does NOT include a Resource Central Access Code Card. To purchase the text with a Resource Central Access Code Card, please use ISBN: 0-13-283008-6 Hazardous Materials Operations is designed for firefighters, law enforcement personnel, emergency medical services (EMS) providers, and industry employees that may be faced with hazardous materials emergencies. This text follows the 2008 NFPA 472 competencies and is organized to follow the logical progression of a hazardous materials response. Providing technical information that can be used for initial training and periodic recurrent training, this book must be complemented with hands-on activities designed to reinforce key response concepts. Resource Central, an online student and instructor supplements portal, is available to instructors online and has suggested hands-on activities and exercises for each chapter, review questions, case studies and much more! The third edition of a bestseller, Hazardous Materials Chemistry for Emergency Responders continues to provide the fundamentals of "street chemistry" required by emergency response personnel. Emergency response and hazmat expert Robert Burke takes the basics of chemistry appropriate for response personnel and puts it into understandable terms. The author has retained the style and format that made the previous editions so popular while updating the information to keep the book relevant. See What's in the Third Edition: Expanded section on Ethanol and its hazards to responders Update of NFPA 472 Chemistry requirements Revised section on "hazmat elements" with more hazards and response issues Includes a focus on the importance of the "hazmat elements" of chemical families New incident examples New photographs and graphics The chapters are

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organized by the nine U.S. Department of Transportation's hazard classes. Almost every hazardous material presents more than one hazard; the DOT's placarding and labeling system only identifies the most severe hazards. Therefore, the book provides additional information about hidden hazards for each hazard class. It discusses individual chemicals, their hazards and their physical and chemical characteristics, both as distinct chemicals and within chemical families. The book offers a concise presentation of the topics of most importance to emergency responders on a day-to-day basis. It provides the basic chemistry a responder needs to understand chemical terminology and communicate with others about the chemicals involved in hazardous materials incidents.

Pocket Reference for Hazardous Materials Response serves not only as a quick reference guide for on-scene response at emergency incidents, but also provides many examples and illustrations that can be utilized during training. Features include cross-referenced material for ease of use, quick action guides, and additional reference information. Book jacket.

This book is a glossary of terms and abbreviations used in the Hazardous Materials Response World. It contains definitions for everything from various government and hazardous materials management agencies to WMDs and Terrorist tools to chemical terms to Medical terminology for the effects of exposure to chemicals.

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