

IAC Mission Success Stories



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Chemical and Biological Defense IAC (CBIAC)



PEGEM Version 3.6 Release

The CBIAC, through Technical Area Task (TAT) 268, announces a 4th quarter 2000 release of version 3.6 of the Ballistic Missile Defense Organization (BMDO) sponsored Post Engagement Ground Effects Model (PEGEM). Funded by the BMDO, PEGEM version 3.6 includes all the capabilities within version 3.5, plus:



- PSE is more robust
- Capability to use LandScan population data
- Statistical Casualty model for very large chemical agent droplets
- Additional meteorological input features
- ADRG/DTED map display capability
- NBC3 hazard area calculation and display
- Probabilistic hazard areas
- Improved submunition algorithms and databases
- Advanced Graphical User Interface
- STEM database – An easy to use payload damage model at PEELS level of accuracy
- Easy event relocation for "what if" analysis

[Continued on Story 1](#)

Chemical Warfare Agents: Toxicity at Low Levels

The research findings of scientists pursuing the Army's mission of developing medical protections against the effects of chemical warfare agents are the substance of a new book by CRC Press entitled Chemical Warfare Agents: Toxicity at Low Levels. The book edited by Dr. Satu M. Somani and Col. James A. Romano, Jr. Dr. Somani, of Southern Illinois University School of Medicine, has conducted research on nerve agents under contract for the U.S. Army Medical Research and Materiel Command (USAMRICD) for over 15 years. Col. Romano, who holds a doctorate in experimental psychology, is the commander of the USAMRICD, at Aberdeen Proving Grounds, the Defense Department's premiere laboratory for medical chemical defense research.

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Chemical and Biological Defense IAC (CBIAC)



PEGEM Version 3.6 Release (continued)

PEGEM was developed by the BMDO to support the acquisition of ballistic missile defense. The model provides the ability to demonstrate the benefit of missile defense capability through estimation of the extent of ground hazard resulting from either an intercepted missile or from a nominally functioning threat. PEGEM provides high explosive, chemical, and biological weapon ground hazard assessment for multiple threat types and event times. PEGEM makes use of the missile defense specific environments—payload response to impact, high altitude effect and dynamic release of payload elements—to produce the source terms for modeling transport and dispersion of the residual debris and the resulting ground hazard. PEGEM invokes Defense Transport and Dispersion models (VLSTRACK or HPAC) for position estimate of wind borne agents.



PEGEM end-to-end calculations as well as parametric analysis capabilities can be applied to offensive deployments and intercepts. Model outputs consist of deposition mass, dosage, and fragment and debris kinetic energy grids, as well as instantaneous concentrations and casualty grids at user-specified times-of-interest on assets-of-interest.

Due to its acquisition support role, distribution is controlled by the BMDO, but PEGEM is available at no cost for release to BMDO authorized users. Further information about PEGEM is available at <http://www.mevatec.com/pegem>. To request PEGEM 3.6 contact:



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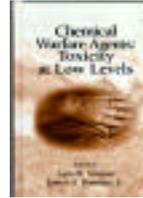


Chemical and Biological Defense IAC (CBIAC)



Chemical Warfare Agents: Toxicity at Low Levels (continued)

Seven of the book's chapters were authored or co-authored by USAMRICD's experts in the toxicity of chemical warfare agents and the development of medical countermeasures. In addition, scientists from USAMRICD's sister laboratory, the Walter Reed Army Institute of Research, contributed to the book, as did scientists from the U.S. Army Edgewood Chemical Biological Center, the U.S. Army Center for Health Promotion and Preventive Medicine, academia, and allied government research laboratories.



The comprehensive text covers such topics as the health effects of low-level exposure to nerve agents and to the blister agent sulfur mustard, the acute and chronic toxicity of cyanide and riot control agents, the development of pharmacological countermeasures to botulinum intoxication, and the psychological factors in chemical warfare and terrorism. Chapters explore how stress can affect the toxicity of chemical agents and the effectiveness of treatment compounds and describe the Army's pursuit of new methods of detoxification through the development of circulating scavenger enzymes and enzymes covalently bound to a decontaminating sponge. In addition, the last chapter discusses the emergency response to a chemical warfare incident, describing domestic preparedness, first response, and public health considerations.

Dr. James M. King, Deputy Director of the CBIAC, is co-author, along with Col. James A. Romano, of chapter 13, which addresses "Psychological Factors in Chemical Warfare and Terrorism." Dr. King holds a doctorate in Psychology from the University of Texas at Arlington and has collaborated regularly with Col. Romano. The book, is part of the CBIAC collection.

Somani, Satu M. & James M. Romano, Jr., eds. *Chemical Warfare Agents: Toxicity at Low Levels*. Boca Raton, FL: CRC Press, 2000, ISBN 0-8493-0872-0, CRC Press LLC, 2000 N.W. Corporate Blvd., Boca Raton, FL 33431, (800) 272-7737, <http://www.crcpress.com/us/>.

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