Description of the PEAC Tool

INTRODUCTION

The PEAC tool was designed as a pocket or hand-held computer* application and database containing information on hazardous or potentially hazardous chemicals including emergency response information in the event of a spill. The sources of information in the PEAC tool are listed here.

Several employees of Western Research Institute (WRI), a non-profit research organization affiliated with the University of Wyoming, originally conceived the PEAC tool. While under contract with the Department of Energy in 1990, Western Research Institute investigated 123 chemical spill accidents or potential spill accidents in the United States where public evacuations took place, including interviews with emergency responders. A major finding of the study was that none of the evacuations were based on gas dispersion modeling or other procedures for responding to specific spills even though in a few cases emergency response software such as CAMEOä or ALOHAä was available. The problem was that decisions had to be made quickly, and limited information was available to those making the decisions at the time of the spill accident. The people who knew how to run the CAMEO program on a PC were not available when the spill occurred, for example. The Western Research Institute employees conceived of a single hand-held computer tool containing all of the information in the North American Emergency Response Guidebook, the NIOSH Pocket Guide to Hazardous Chemicals, chemical protective clothing, and gas dispersion modeling capabilities, in a format that can be easily accessed by emergency response personnel working under field conditions.

Western Research Institute continued to do chemical spill related research starting in the 1990's under a series of contracts at the DOE HazMat Spill Center, located at the Nevada Test Site, near Mercury Nevada. This is the only site in the United States where hazardous chemicals can be released to the atmosphere as a result of spill accident tests. Some specific assignments were (1) liquid ammonia and chlorine evaporation measurement tests and (2) dense gas dispersion measurements under neutral and stable atmospheric conditions simulating a spill in a large industrial complex. Western Research Institute also maintains a database of non-proprietary spill tests results at the HazMat Spill Center, which is accessible to the general public from the Internet. This hands-on experience permitted comparisons of gas dispersion modeling and other spill information with field results, which was very useful in developing the PEAC tool.

A prototype PEAC tool containing a limited number of chemicals was made available to a select group of emergency responders and HazMat trainers in 1996. The Apple Newton Message Pad 130, which features the Newton 2.0 operating system, was used as the platform for the PEAC tool. Based on feedback from users, an expanded version was offered for sale starting in 1997 containing all of the chemical listed in the 1996 North American Emergency Response Guidebook, the 1997 NIOSH Pocket Guide to Hazardous Chemicals, and selected other sources. The 1998 PEAC version also contained NFPA hazard rating designations, computations for fire-fighting using foam, gas dispersion modeling capabilities including both passive and dense gas releases based on levels of concern, emergency response phone numbers, chemical protective clothing information, respirator recommendations, and internal calculations for chemical release rates from different spill configurations.

The Western Research Institute employees who developed the PEAC tool formed a for-profit company AristaTek, Inc., in 1999, which was licensed to market the PEAC tool for WRI. Ownership of the patent was transferred to AristaTek in December 2000. The employees continue to do spill-related and emergency response work including DOE contract work at the HazMat Spill Center. Both organizations work together on developing and communicating emergency response technology and the PEAC tool.

After mid-2000, a Windows Pocket PC version of the PEACtool was made available, which contained an expanded list of chemicals and chemical properties. The Department of Defense also granted permission to AristaTek in 2000 to incorporate chemical warfare response information into the PEAC tool developed as a result of a DOD contract during 1999-2000. In the fall of 2001, AristaTek focused on including response information and references for explosives, biological agents, and radioactive isotopes because of the terrorist attacks in September 2001. The new version of the database and application was called PEAC-WMD 2002. As of March 2002, the PEAC tool was available on HP Jornada 540 and 560 Series; Compaq Aero 1550; Compaq iPAQ H3100, H3600 & H3800 Series; Casio Cassiopeia E-125 and E-200; and the ruggedized Symbol PPT 2700 & PPT 2800. All of these Pocket PCs include at least 16MB of ROM, e-mail and Internet Explorer, and voice recorder. Further upgrades are in the planning stage.

SUMMARY OF INFORMATION IN THE PEAC TOOL

Database of 11,000+ chemical entries, chemical synonyms, including the DOT Guide information, physical properties, and NFPA hazard rating designations.

Descriptive information on the chemical (e.g. appearance, whether odorous, etc.)

Specific chemical protective clothing information

Respirator recommendations

Data base of Levels of Concern (8-hour worker exposure limits, ERPG-1, ERPG-2, ERPG-3, STEL, IDLH, TEEL-1, TEEL-2, and TEEL-3)

Internal computations for chemical release rate for an evaporating pool, pipe discharge, a hole in a container or tank, or a sudden release of all of the chemical under pressure

Gas dispersion modeling capabilities including both passive and dense gas dispersion, for predicting protective action distances based on a Level of Concern

Metric/English conversions

AristaTek now provides a version of the PEAC application and database that will run in the Windows 95/98/NT/2000/ME/XP environment.