MIDAS: Munitions Items Disposition Action System Database

Argonne supports the U.S. Army Defense Ammunition Center (DAC) in developing databases by providing technical support for the Munitions Items Disposition Action System (MIDAS) Program. These databases provide essential information for demilitarization planning, resource recovery and reuse, demilitarization waste characterization, and environmental permit application and impact assessment. MIDAS contains detailed technical data on the structure and material constituents for a wide range of munitions. It is a user-friendly program for storing, searching, processing, and retrieving data and is widely used by the ammunition community through the MIDAS website (https//:midas.dac.army.mil).

PROBLEM/OPPORTUNITY

As concerns about environmental effects associated with the demilitarization program increase, options for resource recovery, reuse, and other acceptable methods for disposal of conventional military munitions are being explored. Before MIDAS existed, the information needed to develop and evaluate these options was obtained from many organizations through fragmented and duplicated research.

APPROACH

The objective of the MIDAS Program is to provide an authoritative central repository for data that eliminates duplication of data development efforts and provides the information needed for the conventional ammunition demilitarization program in an easy-to-use format.

The MIDAS database was created to organize the data for each component and part of a munition into a hierarchical list, which makes the structure easily discernible. For data on a munition to be complete, information on each primary component, its subcomponents, and individual parts must be included. This breakdown enables users to view the munition structure and detailed data associated with each part, such as weight, material composition, and material specifications.

RESULTS

A MIDAS database prototype created by Argonne was used by DAC to evaluate the structure and characteristic data associated with items in a small number of selected artillery munitions containing propellants, explosives, and pyrotechnics (PEP). On the basis of this evaluation, DAC and Argonne determined and implemented the database

performance functions and input data requirements. Argonne has since finalized the database structure for items containing PEP and inert constituents. Data input procedures and functions were established, and data for more than 8,000 munitions were entered by Army, Navy, and Air Force ammunition experts. The data accuracy was checked, and the system functions were verified. Argonne also prepared system documentation and assisted DAC in conducting user training. Users can extract comprehensive information on munitions or use report options to quickly compute and retrieve total weight and composition statistics for munitions in the MIDAS database.

Argonne has subsequently worked with DAC to:

- develop and implement a Windows-based and web-based programs for MIDAS field operation;

- develop a module with detailed information on packaging for munitions and integrate it into the main MIDAS Program;

- incorporate the Master Munition Index and Munition Family databases into the MIDAS system;

- develop functions for estimating weights of bulk items and certain parts for which weight information is not available;

- add additional capabilities (such as MIDAS data search, scanned munition images, reports, tracking of elements to end items, demil inventory search, quantification of elements in demil inventory stockpile, a procedure to review and incorporate data submitted by satellite installations into a central data library, etc.);

- prepare additional documents, including QA documents and user's guides;

- provide munition characterization tracking and quality assurance; and

- support field operations.

MIDAS is available over the World Wide Web or CD-ROM for access by the MIDAS development team for data entry.
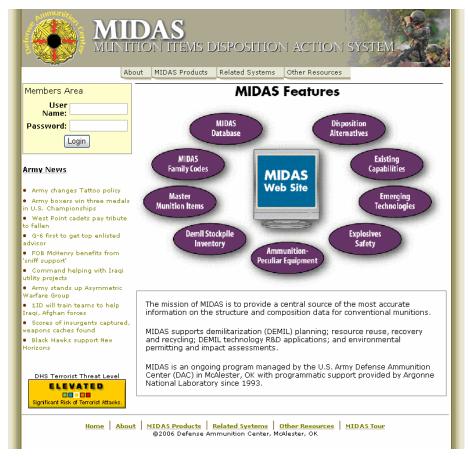
FUTURE

The operation and maintenance of the MIDAS databases have been the responsibility of DAC since data loading began. This is an example of the appropriate role of a national laboratory in developing a tool with its federal partner and then transferring it to the partner for implementation. Since the delivery of MIDAS to DAC, munition characterization, data entry, and operation have been a DAC responsibility. Argonne continues to assist DAC with technical enhancements to the system.

COMMUNICATION OF RESULTS

Several documents on MIDAS have been provided to the sponsor, including a user's guide for general users, a user's guide for administrators, a user's guide to new features, a user's guide to the weight estimation program, and a report on the procedures for and results of testing the weight estimation program. DAC also received CD-ROMs on the MIDAS program. A user's guide that is available to the public was also published.

The capabilities of MIDAS were discussed in papers presented at the Global Demilitarization Symposiums, Defense Cleanup Midwest Conference, Air and Waste Management Association meeting, and the 25th Environmental Symposium and Exhibition sponsored by the National Defense Industrial Association. Additional information about the MIDAS Program, current status of the databases, and user registration information can be found on the MIDAS website at https//:midas.dac.army.mil.

MIDAS website main screen