

## DEPARTMENT OF ENERGY WASTE INFORMATION NETWORK: HAZARDOUS AND MIXED WASTE DATA MANAGEMENT

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### ABSTRACT

The Department of Energy (DOE) Waste Information Network (WIN) was developed through the efforts of the DOE Hazardous Waste Remedial Actions Program (HAZWRAP) Support Office (SO) to meet the programmatic information needs of the Director, Office of Environmental Restoration and Waste Management. WIN's key objective is to provide DOE Headquarters (HQ), DOE Operations Offices, and their contractors with an information management tool to support environmental restoration and waste management activities and to promote technology transfer across the DOE complex. WIN has evolved in various stages of growth driven by continued identification of user needs. The current system provides seven key features: technical information systems, bulletin boards, data file transfer, on-line conferencing, formal concurrence system, electronic messaging, and integrated spreadsheet/graphics. WIN is based on Digital Equipment Corporation's (DEC) VAXcluster platform and is currently supporting nearly 1,000 users. An interactive menu system, DEC's ALL-IN-1 (1), provides easy access to all applications.

WIN's many features are designed to provide the DOE waste management community with a repository of information management tools that are accessible, functional, and efficient. The type of tool required depends on the task to be performed, and WIN is equipped to serve many different needs. Each component of the system is evaluated for effectiveness for a particular purpose, ease of use, and quality of operation. The system is fully supported by project managers, systems analysts, and user assistance technicians to ensure subscribers of continued, uninterrupted service. As WIN continues to expand in scope and capabilities, upgrades will be made to streamline system access and simplify data updating and retrieval. Constant attention to quality by system developers and operators and to user feedback keeps WIN in the forefront of environmental restoration and waste management information technology.

### INFORMATION SYSTEMS

As a result of a structured analysis study conducted during FY 1988, an effort was made to define a flexible data model that would support all current waste information requirements and could be readily adjusted to meet future waste information needs. During FY 1989, two data models were developed that cover requirements for DOE's Environmental Restoration Remedial Actions (ERRA) Program and the treatment, storage, and disposal (T/S/D) of hazardous and mixed wastes. The data requirements for these models were defined and reviewed by representatives from DOE-HQ, field offices, and contractor installations. Data collection and maintenance activities to inventory, collect, and update the data are under way. Collectively, these two models function as an overall model that will be expanded to include other key topics of significance to

DOE's environmental restoration and waste management programs. (See Fig. 1.)

#### Environmental Restoration Remedial Actions Information System (ERRAIS).

ERRAIS is designed to provide DOE-HQ with a mechanism for tracking the overall status of environmental restoration and remedial action activities by providing cost, task, and release site data in a timely manner. DOE-HQ will be able to examine budget allotments and actual versus projected costs to assist in financial decision making. Task and milestone data will be available for use in scheduling and reporting activities. Potential release sites and known suspected contaminant information will help HQ prioritize preventive and remedial efforts. For the field, improved reporting of current, accurate, and consistent data on ERRA activities will be possible, with generation of routine or ad hoc reports to aid in status tracking and decision-making functions.

The development of ERRAIS is being conducted in three phases. The first phase concentrates on the technical data covering identification of potential release sites, type of release, contaminants, and media. Release site data have

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# DOE WASTE INFORMATION NETWORK

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## WIN

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### PURPOSE

Waste Information Network is a national communications network designed to function as an information tool to support environmental restoration and waste management activities and to promote technology transfer within the DOE complex.

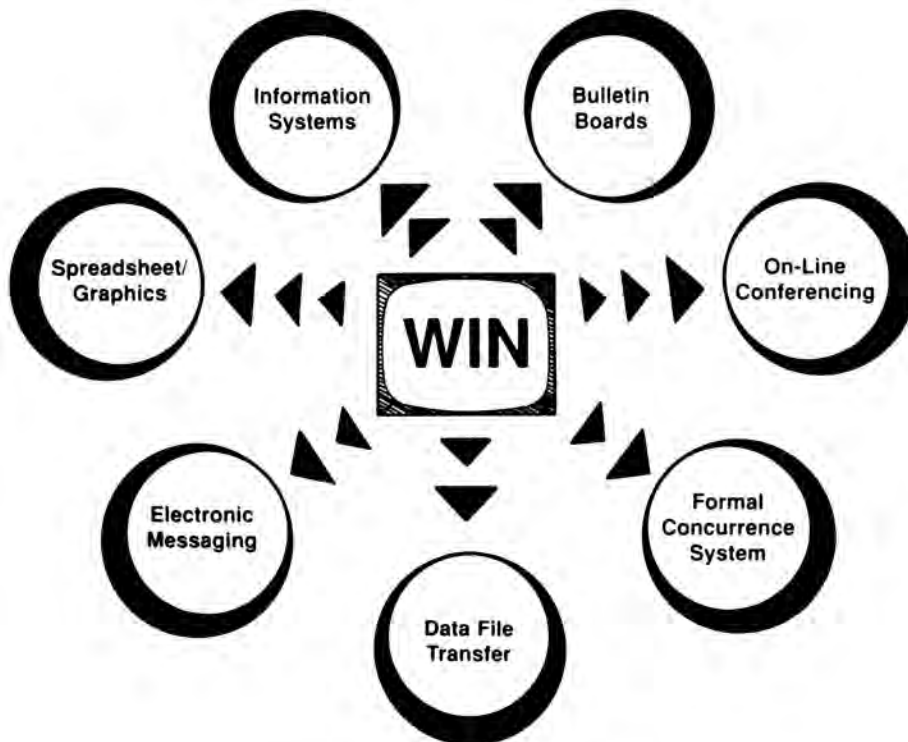


Fig. 1. DOE Waste Information Network.

been collected for four Operations Offices and are being entered into the central system. The second and third phases relate to linking the release site data to the task and budget information. The goal is to have a functional system ready for implementation by September 1990. Major systems development activities are nearing completion, and data validation and quality assurance procedures are being enacted to ensure system integrity. The data entry system is under development, with full implementation expected by June 1990.

DOE's waste management information needs, additional waste data will be collected to continue to meet all system requirements.

### BULLETIN BOARDS

The key objective of the bulletin boards is to support DOE's environmental restoration and waste management programs in highlighting and tracking major program initiatives and to promote information transfer within the DOE community. WIN's electronic bulletin board feature is designed to organize an immense volume of timely information

The data categories, consisting of over 70 elements, for the ERRAIS include:

Actual Cost	Funding Allotment	Potential Release Site
ERRA Task	Major Project	Potential Release Site
ERRA Task Phase	Major Systems Acquisition	Contaminants
ERRA Task Problems	Milestones	Potential Release Site Media
ERRA Task Status	Milestone History	Projected Costs
Financial Plan Funding	Operations Office	Responsible Party

### Treatment, Storage, and Disposal Information System

The primary objective of this system is to serve as a central resource for data on waste generation, treatment, storage, and disposal. The data model currently identifies and defines the data requirements into the following categories:

Characterization	Radioactive Composition	Unit
Chemical Composition	Reclaimed Material	Unit Capability
Containing Device	Recycling Activity	Unit Capacity
Device Certification	Storage Removal	Waste Disposal
Disposal Technology	Storage Technology	Waste Stream
Facility	Transportation	Waste Stream Container
Location	Treatment Residue	Waste Storage
Point of Contact	Treatment Technology	Waste Treatment

Sites are required by federal regulations and agency orders to know what type and quantity of wastes are generated and must show how the waste will be stored until it is treated and/or disposed of in an appropriate manner. During FY 1990, data were collected on land disposal restricted (LDR) mixed wastes, including storage capabilities and capacities and treatment options. The LDR data represent the overall T/S/D information system and were used to generate a national report on LDR Mixed Wastes as required by the Federal Facility Compliance Agreement between DOE and the Environmental Protection Agency (EPA). Waste minimization efforts are also supported by this information system, as attempts are made to identify processes that could generate fewer wastes by improving technology, equipment, procedures, or components. As the T/S/D information system expands in scope to fully support

into categories that may be searched and viewed according to specific areas of interest. The information is usually of a general interest nature, although several bulletin boards have been customized for specific DOE programs. Users may browse the Conferences and Symposia board for information about upcoming meetings that may be of special interest, including workshops and courses. The Regulatory Highlights board contains information about new legislation or orders that may affect DOE waste management efforts or policy issues. Other bulletin boards track program commitments and milestones, accept and monitor comments on policy issues, track current events of key importance, and provide a digest of federal decision-making activities. The bulletin boards are updated on a regular



basis to keep the most current information immediately available to WIN users.

#### DATA FILE TRANSFER

One of the most innovative information and technology transfer features of WIN is the data file transfer capability. Specialized software on WIN allows personal computer users to exchange data or program files in a matter of minutes, no matter what type of file or information is transferred. Using industry standard communication protocol, users can easily upload data files to the WIN system and send them to other users, who may then download the file back to their local personal computer. This feature functions as a cost-effective and efficient method of transferring data files. Almost all terminal emulator packages written for personal computers support the industry standard protocol, thereby precluding the need to purchase a specific emulator or file transfer package. Waste data, spreadsheets, word processing documents, graphics, and other file types may all be transmitted across WIN. Some files, particularly text files, may even be modified and viewed on WIN before delivery to other users. Data file transfer is an excellent mechanism for electronic transmission, review, and concurrence of program-related documents in a timely and cost-effective manner.

#### ON-LINE CONFERENCING

The on-line conferencing feature of WIN provides users with a means of participating in electronic meetings and conferences regardless of geographic location. It may also be used as an interactive bulletin board, allowing notice posting and response without the need for all parties to be on-line at once. On-line conferencing reduces or eliminates the time and expense commonly required to attend meetings or to conduct conference calls. Instead, information reaches WIN users much faster than conventional methods, and everyone who is interested in a particular topic has an equal opportunity to participate in the discussion. Each conference usually has an agenda that focuses attention on a specific topic. As with any meeting, the conference may have a moderator, who initiates the discussion and manages the conference. On WIN each agenda item is considered a topic, and comments on the topics are considered replies. These topics and replies provide a mechanism for the DOE community to quickly discuss issues of importance that affect environmental restoration and waste management activities. The most important aspect of on-line conferencing is the ability of every user to examine an issue from many perspectives. A tremendous variety of expertise can be focused very rapidly on an im-

portant issue that might otherwise require weeks for adequate comment.

#### FORMAL CONCURRENCE SYSTEM

The automated reporting and concurrence feature that is designed to support DOE's Office of Environmental Restoration and Waste Management provides a cost-efficient method for issuing and obtaining field review and concurrence of major program documentation. The concurrence system routes documents to a sequence of authorities who may approve, annotate, or reject the electronic document according to predetermined permits. The system uses a person's password as the "signature," thereby securing against unauthorized access to formal documents. This system was developed through a joint effort between the DOE Albuquerque Operations Office and DEC and is being put into production on WIN.

#### ELECTRONIC MESSAGING

Electronic messaging is an excellent program management tool, as well as an efficient and effective communications medium. WIN's electronic messaging feature is the central mechanism for sending and receiving memos, reports, data files, and other information to and from hundreds of users nationwide within seconds. The WIN messaging facility, which uses a file cabinet approach to document control, is designed to allow quick access to all memoranda and automatically manages many of the routine maintenance functions that make less sophisticated systems cumbersome to operate. All messages on WIN receive high priority and are delivered within seconds. Message answering, forwarding, and filing functions permit rapid processing of incoming mail, while the powerful editor and full-featured menu make originating messages a simple task. WIN's electronic messaging facility integrates with the data file transfer feature to create a versatile and efficient information sharing tool. Many functions may be set by users to operate automatically, so that they need not be on-line to send or forward electronic messages.

#### INTEGRATED SPREADSHEET/GRAPHICS

WIN supports user numerical analysis needs by offering a spreadsheet/graphics capability from within the ALL-IN-1 menu system. The capability provides all the features expected in a quality electronic spreadsheet program and permits users to operate in various menu styles that are similar to popular personal computer programs. Integration of this feature with the information systems data bases permits on-line presentation of waste data in a variety of graphic formats to support programmatic planning and decision-making. Further, the program allows personal computer users to upload personal computer formatted spreadsheets directly to WIN and to use them with the special software. Files may similarly be transmitted back to

the personal computer. Users can also create customized macros to aid in manipulating routine reports.

### CONCLUSION

The WIN system provides users with a variety of applications that directly support DOE environmental restoration and waste management activities (Fig. 1.). WIN also promotes technology transfer within the DOE complex by offering the user simple and efficient tools for (1) exchanging general news of interest, (2) receiving review and concurrence on major program issues/documents, (3) transmitting data files, (4) posting timely information critical to program activities, (5) conducting data analyses, and (6) tracking and monitoring the status of environmental restoration and waste management projects. The following types of information are currently being transmitted through WIN using the features discussed above:

- Policy Issues and Procedures
- Waste Stream Data
- Program Commitments/Highlights
- Interpretation of Regulations and DOE Orders
- Draft Documents for Field Comments
- Monthly/Status Reports
- Technical Information Requests
- User Support/Training
- Budget Spreadsheets
- Statements of Work
- Technology Surveys
- General Announcements - Conferences/Workshops

Each of WIN's features is being customized to meet user requirements. Continuous feedback from users is essential to ensure that WIN is meeting its objectives. Real-

izing that few users have exactly the same needs, the WIN system allows each account holder to customize his or her electronic view of the system to best meet individual requirements. All operations on WIN may be performed by selecting command options from the screen and by entering brief responses to system prompts. Each functional module operates similar to all others, reducing training requirements and support costs. Users need learn only a few basic command concepts that apply throughout the system to begin effective use of WIN. A dedicated WIN User Support Group is available to provide on-site and/or electronic training and consultation. A comprehensive user reference manual is scheduled to be issued to all users during April 1990. Future enhancements of WIN will continue to be based on defined requirements. Continuous interface with users at DOE-HQ, Operations Offices, and contractor installations will be a focal point during WIN's development/implementation states to ensure (1) compatibility with existing site-specific data bases, (2) accurate implementation of data specifications for the central information system, and (3) user satisfaction.

### REFERENCE

1. ALL-IN-1 is a trademark of Digital Equipment Corporation.