

5. DATA ELEMENTS OF SPECIAL INTEREST TO YOU

As stated earlier, the **HMIS** is designed to help people working in a large number of different jobs. It is unlikely that you (or anyone else) will ever need **all** of the information on one microfiche record. For example, packaging and transportation people may need **the** information in the transportation section of the microfiche. Much of the other **HMIS** data are not needed by these people for routine work performance.



A survey of **HMIS** users with different job functions was used to identify data elements of particular value to them. The survey identified several data elements that were used in most instances. These data elements are:

- | | |
|--------------------------------|---------------------------------|
| o <i>National stock Number</i> | o <i>Part Number/Trade Name</i> |
| o Part Number Indicator | o Manufacturer |
| o Emergency Telephone Number | o Item Name |

The remainder of this section identifies major job categories (functional areas) that have a need for selected information in **HMIS** and how people working in those areas can use that information. Also identified are the data elements most often used by people working in those functional areas (see Appendix B for definitions of the data elements). You should find the functional area heading

that best describes your job responsibilities. That section will identify the data elements that you will probably use most often in your work duties.

FUNCTIONAL AREA: DISPOSAL OPERATIONS

The workers in this functional area are usually concerned with receiving, storing, handling, transporting, and disposing of excess material and items identified as waste.



The **HMIS** has placed a major emphasis on providing valuable information to disposal operation personnel. The HMIS can help you identify an unknown item and its properties. **By** knowing the item's properties personnel can make decisions relating to:

- o Safe storage prior to disposal;
- o Recommended personal protective equipment;
- o Precautions to take in containing material leaking from a damaged container;
- o The reutilization, transfer, donation, and sales disposal cycle for the item;
- o Acceptable disposal methods for **small** and large quantities of specific materials;
- o Uniform Hazardous Waste Manifest information;
- o Defense Reutilization and Marketing Office accountability acceptance; and
- o Restrictions regarding the transportation *or* disposal of items as wastes.

The disposal publication is the most recent one added to the system. In addition to augmenting some of the information in the other two publications, this new publication provides guidance in handling the material as a used product or as waste. This file assists you in the preparation of uniform Hazardous Waste Manifests (see Figure 5-1), provides guidance in processing material through the Defense Reutilization and **Marketing Service (DRMS)** disposal cycle, and provides disposal guidelines for small and large generators.

The data elements most useful to people working in disposal operations include:

- | | |
|--|---|
| o Storage code | o.. Flash Point |
| 0 Type of Container | 0 Other Protective Equipment |
| 0 Percentage of Hazardous Ingredients | 0 NIOSH No. (National Institute for Occupational Safety and Health Number) |
| 0 chemical Name (Hazardous) | 0 Effects of Overexposure |
| 0 Threshold Limit Value | 0 Materials to Avoid |
| 0 DOT Class | 0 Emergency First Aid Procedures |
| 0 Mode Indicator | 0 Protective Gloves |
| 0 Reportable Quantity | 0 Eye Protection |
| 0 DOT Label | 0 DOT Shipping Name |
| 0 ID Number | 0 Waste Elimination |
| 0 Spill and Leak Control | 0 Original Unit of Issue |
| 0 Other precautions | 0 DRMO Disposal Assistance Service |
| 0 Accountability Acceptance by DRMO | |
| 0 EPA Hazardous Waste Code - New Condition | 0 EPA Hazardous Waste code - Used/Contaminated Condition |
| 0 EPA Hazardous Waste Characteristic - New Condition | 0 EPA Hazardous Waste characteristic - Used/Contaminated Condition |
| 0 EPA Acute Hazard | 0 Disposal Cycle - RTD Bypass |
| 0 Disposal Cycle - Sales Bypass | 0 Disposal Method - small Quantities |
| 0 Disposal Restrictions | 0 Disposal Method - Large Quantities |

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of	information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address				A. State Manifest Document Number		
4. Generator's Phone ()				B. State Generator's ID		
5. Transporter 1 Company Name	6. US EPA ID Number			C. State Transporter's ID		
7. Transporter 2 Company Name	8. US EPA ID Number			D. Transporter's Phone		
9. Designated Facility Name and Site Address		10. US EPA ID Number		E. State Transporter's ID		
				F. Transporter's Phone		
				G. State Facility's ID		
				H. Facility's Phone		
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers No.	Type	13. Total Quantity	14. Unit Mt/Vol	I. Waste No.
a.						
b.						
c.						
d.						
K. Additional Descriptions for Materials Listed Above		K. Handling Codes for Wastes Listed Above				
15. Special Handling Instructions and Additional Information						
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in proper condition for transport by highway according to applicable international and national governmental regulations.						
Printed/Typed Name		Signature		Date Month Day Year		
				1 " 1 " 1 "		
17. Transporter 1 Acknowledgement of Receipt of Materials						
Printed/Typed Name		Signature		Date Month Day Year		
18. Transporter 2 Acknowledgement <input type="checkbox"/> Receipt of Materials						
Printed/Typed Name		Signature		Date Month Day Year		
19. Discrepancy Indication Space						
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 11.						
Printed/Typed Name		Signature		Date Month Day Year		
				. . .		

EPA Form 8700-22 (3-84)

Figure 5-1. Uniform Hazardous Waste Manifest.

- o DOT Proper Shipping Name (waste) o UN/NA Number
- o Supplemental Disposal
File Data

How can the HMIS help you fill out a Uniform Hazardous Waste Manifest? suppose you have several 5-pound bottles of contaminated technical grade barium cyanide (NSN 6810-00-241-8420) that must be transported as a hazardous waste. The disposal publication contains the required information. If you look at Section 11 of the manifest (refer to Figure 5-1) you will see that you need the DOT Proper Shipping Name, Hazard class, and ID Number for the item. You look up NSN 6810-00-241-8420 and find the following information:

DOT Proper Shipping Name:
Waste Barium Cyanide, Solid

DOT Hazard Class:
Poison B

DOT Label: Poison B

Reportable Quantity: No

In addition, the publication tells you the EPA Hazardous Waste Number **(P013)--optional information** for the manifest. The EPA Hazardous Waste number is also required when preparing annual or biennial state and EPA reports of disposal actions.

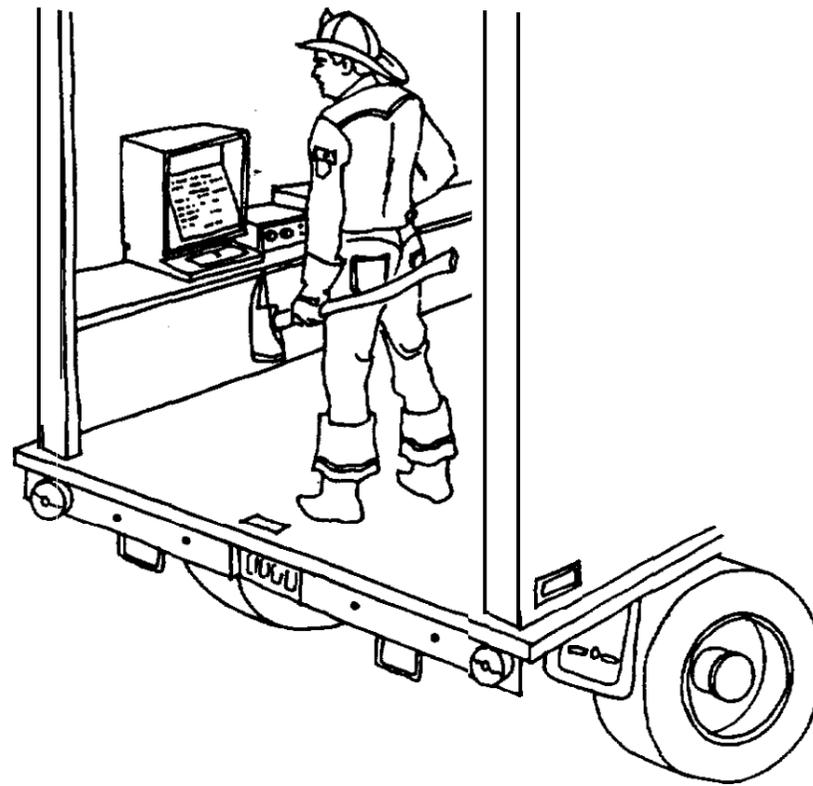
The disposal publication helps in other ways. It indicates to both the DRMO operator and the user of the item (e.g., barium cyanide) that the DRMO will accept accountability and provide disposal assistance service.

The HMIS provides you **with** some safety information, too. The disposal publication warns against touching spilled barium cyanide (under Spill and Leak Control). The HMIS basic publication tells you not to store the item near acids.

FUNCTIONAL AREA: EMERGENCY RESPONSE

Emergency response personnel include fire fighters, spill teams, and emergency medical technicians. Most facilities have trained spill response teams whose members have primary job responsibilities in other functional areas. In the event of a spill or fire, members of the team can be considered as belonging to the emergency response functional area. Often the only **informa-
tion** available to response personnel in an emergency situation is the stock number of the item involved, a placard, or a product name. A quick telephone call to the fire department or a portable microfiche reader in the response vehicle provides you with a quick reference to the item and its properties. Once you identify the material you're dealing with, you can take remedial action to protect workers and property.

You may also call ChemTrec (800-424-9300; 483-7616 in Metropolitan Washington, DC) to obtain immediate advice on responding to an emergency situation involving hazardous materials. ChemTrec personnel are available 24 hours per day.



A portable microfiche reader and HMIS microfiche can be included on emergency response vehicles.

The data elements that people working in emergency response functions find most helpful include:

- o NIOSH No. (National Institute for Occupational Safety and Health Number)
- o Storage Code
- o Chemical Name (Hazardous components)
- o Appearance and odor
- o Spill and Leak control
- o Percent
- o Upper Explosive Limit
- o Threshold Limit value
- o Hazardous Polymerization
- o Item Name
- o Lower Explosive Limit
- o Conditions to Avoid
- o Hazardous Decomposition Products
- o Reportable Quantity (RQ)
- o Threshold Limit Value Mixture
- o ID Number
- o Special Fire Fighting Procedures
- o Extinguishing Media
- o Protective Gloves
- o Emergency First Aid Procedures
- o Ventilation
- o Unusual Fire/Explosion Hazards
- o Handling/Storage Precaution
- o Type of Respiratory Protection
- o Waste Elimination
- o Other Protective Equipment
- o Eye Protection

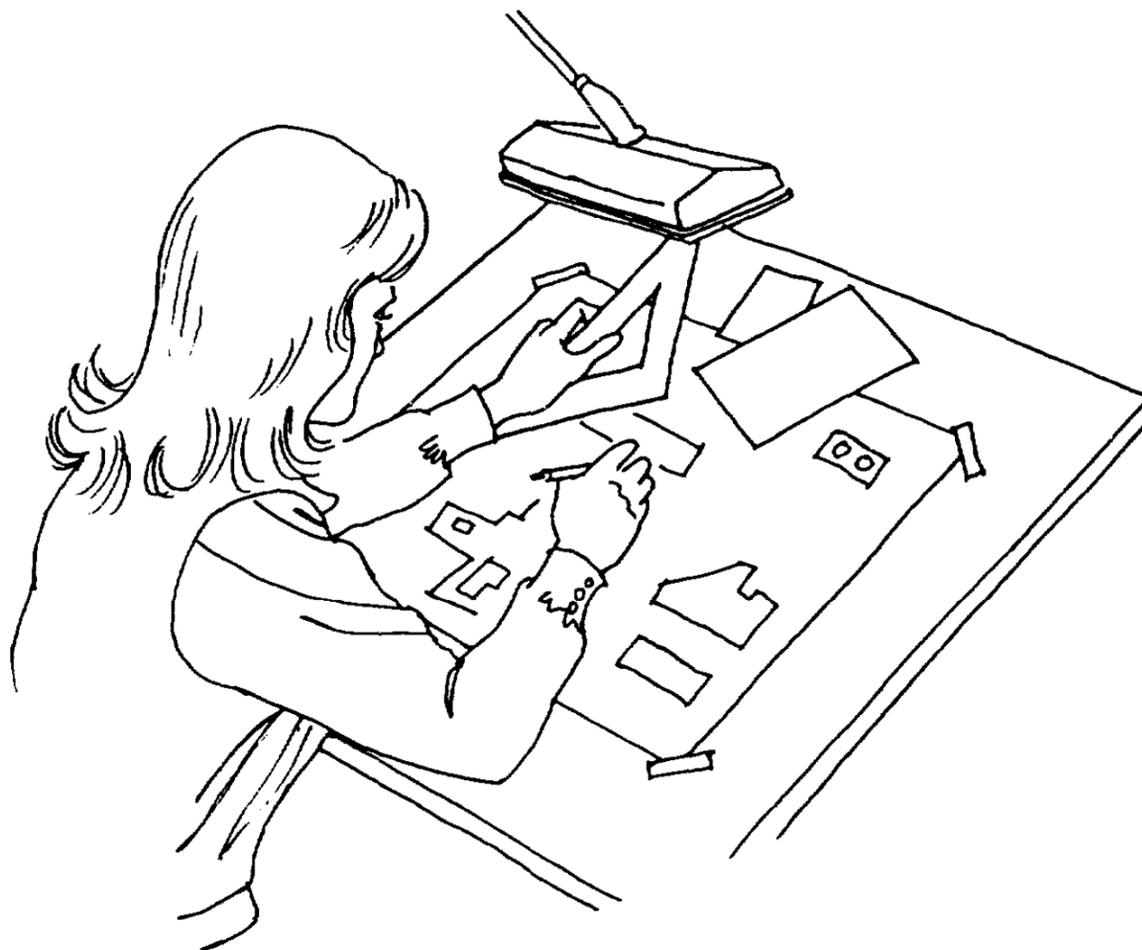
Besides providing the obvious item identification information to emergency response personnel, the HMIS is useful in providing less obvious information. For example, under hazardous decomposition products, a medical technician may find that an item releases a poisonous gas (like cyanide). In the case of barium cyanide, the emergency first aid procedures include a statement indicating the use of **amyl** nitrite pearls. In another instance, if a worker had ingested a material containing **cyclohexanol**, you would be cautioned against inducing vomiting.

The HMIS provides valuable data to emergency response personnel with environmental responsibilities. Data **elements** like volatility in water and specific gravity provide clues on containing materials either before or after they have reached surface water systems. The unit of issue container quantity can help you determine how much material is involved in a spill. And the "other precautions and supplemental data or waste elimination" sections may indicate that extraordinary efforts should be undertaken to isolate the material from fish and wildlife populations.

If the emergency situation involves broken bottles of barium cyanide, individuals with occupational safety and health responsibilities can check the **HMIS** Basic publication and find out that full protective clothing and a **self-contained** breathing apparatus are recommended. Also, by referring to the HMIS fire fighters can find out that toxic fumes can be produced when water or steam comes into contact with barium cyanide.

FUNCTIONAL AREA: ENGINEERING/CONSTRUCTION

Employees in engineering and construction can use the HMIS to assist in the design of new structures, the redesign of existing structures, and



HMIS can be used in design or design evaluation.

related functions. Employees in engineering, design, and construction of hazardous materials handling/storage systems require specific information about the individual items, their properties, and their storage requirements. Information under such data elements as storage codes, flash points, conditions to avoid, and materials to avoid can assist in planning for compatible storage designs. Additionally, *some* of the information contained in the disposal file can prove valuable in designing new DRMO facilities, retrofitting existing DRMO facilities for receipt of hazardous materials, or designing waste treatment facilities.

Individuals working in the engineering/construction functional area will find the following data elements most useful:

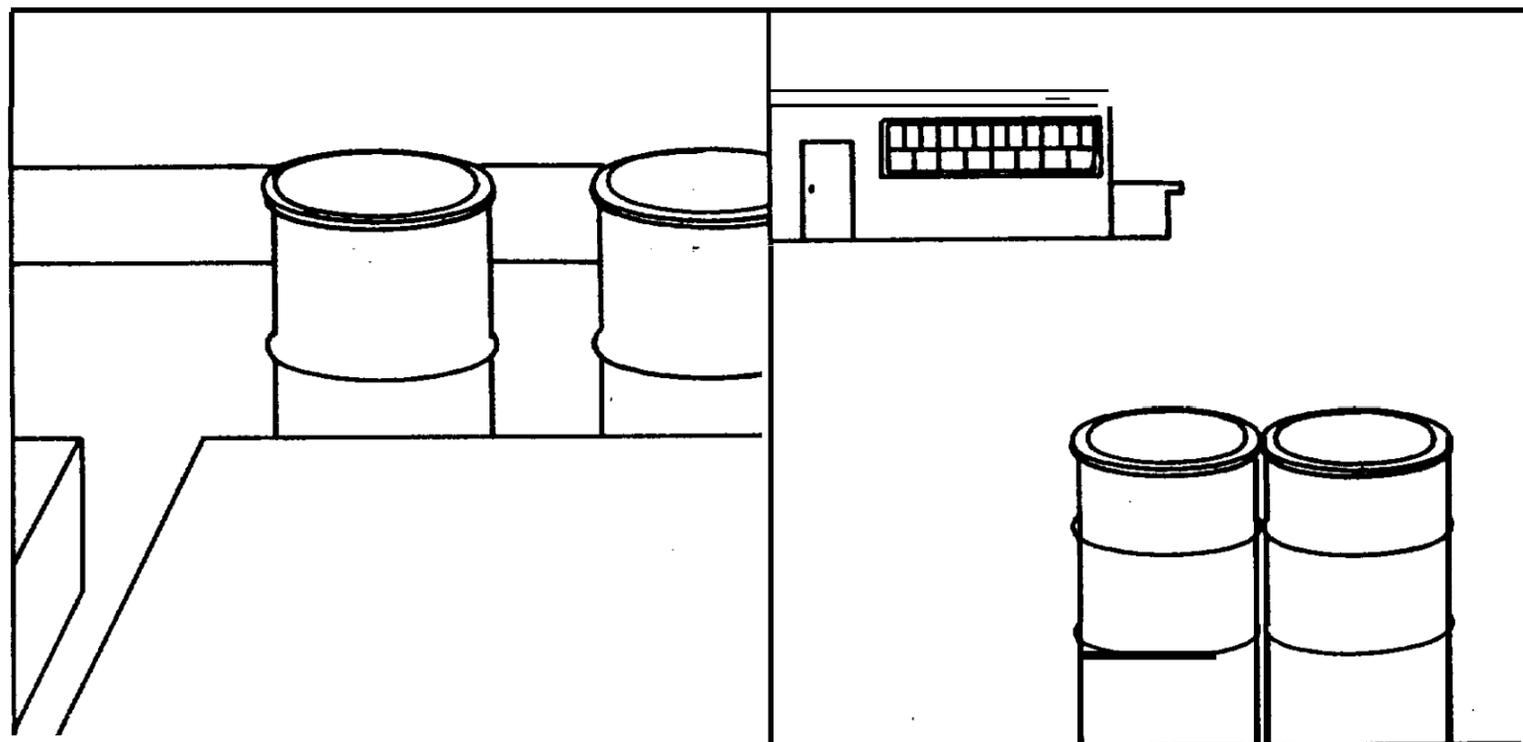
- o Type of Container
- o Chemical Name (Hazardous Components)
- o Storage Code
- o Spill and Leak Control
- o Formula
- o Disposal Method - Large Quantities
- o Conditions to Avoid
- o EPA Hazardous Waste Characteristic - Used/Contaminated Condition
- o Unit of **Issue**
- o Net Unit Weight
- o Chemical Family
- o Flash Point
- o Specific Gravity
- o EPA Hazardous Waste **Characteristic** - New Condition
- o **Disposal** Method - Small Quantities

As part of your job, you may be requested to design storage space for hazardous materials. You will need to know things like conditions to avoid and storage compatibility codes so that you don't design space that stores flammables in close proximity to oxidizers. You will find data elements such as unit of issue, type of container, and net unit weight particularly helpful in determining shelving or warehousing requirements. **All** of those information needs and more can be found in the **HMIS**.

FUNCTIONAL AREA: ENVIRONMENTAL MONITORING AND CONTROL

Workers assigned to this functional area are concerned with preventing the release of hazardous materials to the environment. A **spill** response team usually has an employee with job responsibilities in this functional area. Personnel working in this functional area must also interact with employees engaged in activities *under* other functional areas. Knowledge of the physical and chemical properties (e.g., volatility in water) can help you advise engineers in the design and placement of storage facilities. Some data elements (e.g., volatility in water, conditions to avoid, storage code, disposal restrictions, handling storage precautions) can help in formulating storage recommendations -- for example, should the item be stored in a bermed

area? Many of the data elements contained in the disposal file may assist in resolving questions concerning what constitutes "most conforming storage" requirements.



Knowledge of chemical or physical properties of materials can provide valuable information to workers with environmental responsibilities.

The HMIS can also assist you in your role as a member of or adviser to the spill response team. Again, data elements such as volubility in water, proper disposal methods (e.g., can the effluent from a spill be diverted into the sanitary disposal system?) and reportable **quantity (RQ) information will help** in the decision-making process.

Employees with environmental monitoring and control responsibilities should find the following data elements most useful:

- | | |
|---|---|
| o Vapor Density | o Chemical Family |
| o Storage code | o chemical Name (Hazardous Components) |
| o Volubility in Water | o Evaporation Rate |
| o Conditions to Avoid | o Viscosity |
| o Appearance and Odor | o Percent Volatile |
| o Handling/Storage Precautions | o Spill and Leak Control |
| o Other Precautions | o Disposal Method - Large Quantities |
| o Environmental Impact Statement/
Environmental Assessment
Availability | o Disposal Method - small Quantities |
| o Disposal Restrictions | |

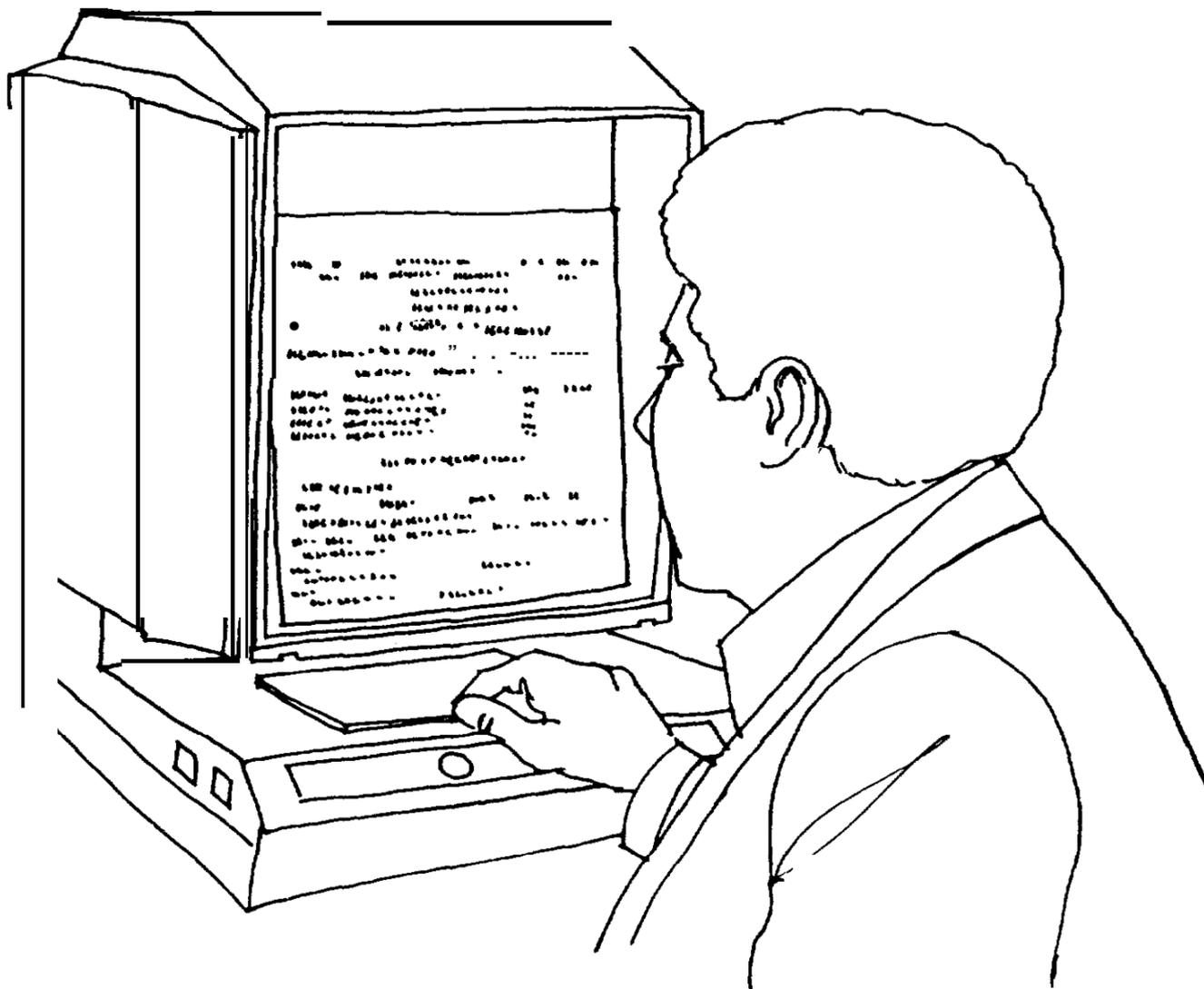
Specifically, the HMIS can help you in responding to questions concerning disposal activities. You may be asked if a particular item can be released into a sanitary sewer system. By knowing the volume of material included and analyzing HMIS data under selected data elements (e.g., chemical name and percentage, volatility in water, evaporation rate per reference, vapor pressure) you should be able to determine if the material should be discharged into a sanitary system, be pretreated prior to discharge, or disposed of in another manner. The disposal publication can also help you by:

- o Summarizing information on acceptable treatment and disposal mechanisms for large and small quantities of the item;
- o Citing technical information on constraints or restrictions to disposal of the item as a waste;
- o Guiding you in contacting the DRMO to learn if they will accept accountability or provide disposal assistance service for the item.

For information on how the HMIS can help you as a member of a spill response team, refer to the emergency response functional area in this Users' Guide.

FUNCTIONAL AREA: OCCUPATIONAL SAFETY AND HEALTH

Individuals assigned to this functional area are primarily trained industrial hygienists, occupational medicine technicians, and safety officers. Again, they are generally represented on a spill response team.



As an occupational safety and health professional, you need to know the physical and chemical properties and toxicity data usually found on **MSDSs**. The HMIS is a control file of, among other things, material safety data sheets (**MSDSs**). Data such as the hazardous components and threshold limit values (TLVs) for items in the military supply system can provide you with the information needed to make decisions concerning the recommended respirators, ventilation systems, gloves, eye protection, and other personal protective equipment that workers should wear when handling a specific hazardous material. Additionally, storage codes, flash points, and other physical and chemical data available in the HMIS allow you to advise on proper storage decisions.

Personnel in the occupational safety and health functional area should find the following data elements most useful:

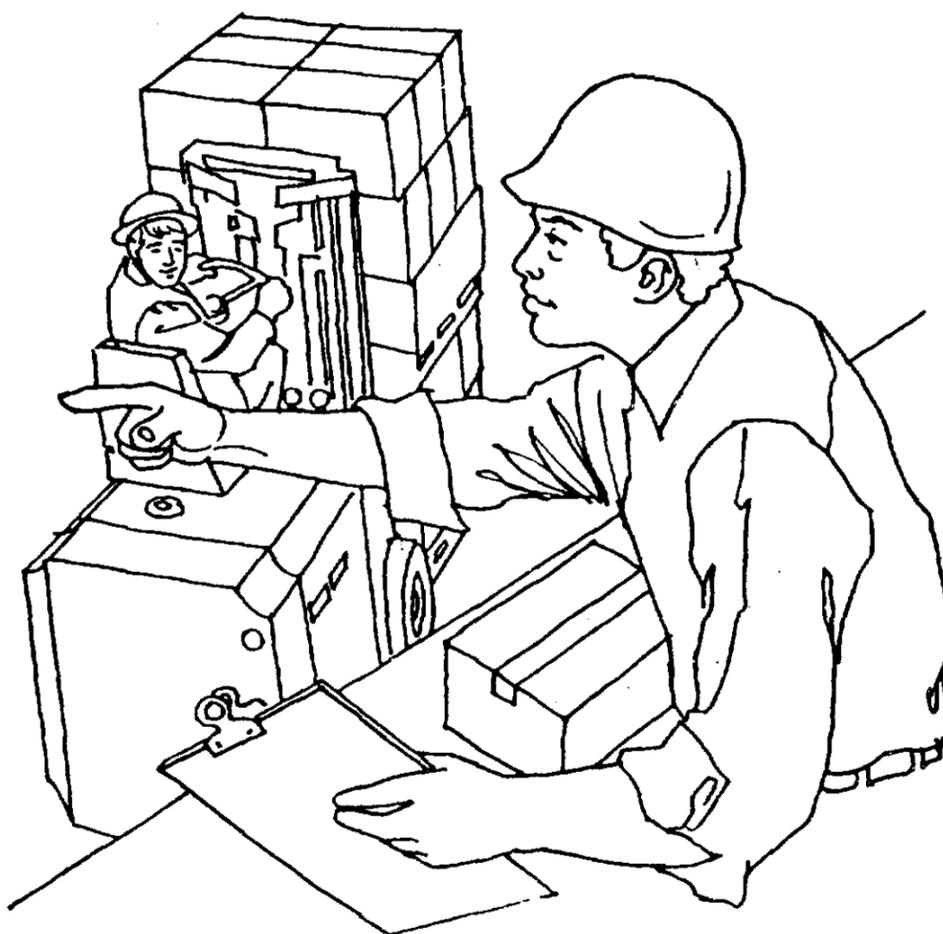
- | | |
|---|---|
| o Chemical Name | o Materials to Avoid |
| o Auto Ignition Temperature | o Hazardous Polymerization |
| o Flash Point | o Conditions to Avoid |
| o NIOSH No. (National Institute of Occupational Safety and Health) Number | o Safety, Storage, Handling, and Fire Fighting Procedures Data Elements |
| o Percent | o TLV Mixture |
| o Threshold Limit Value (TLV) | o Storage code |
| o LOWER Explosive Limit | o Percent |
| o Upper Explosive Limit | o Appearance and Odor |
| o Eye Protection | o Handling/Storage Precautions |
| o Emergency First Aid Procedures | o Protective Gloves |
| o Ventilation | o Type of Respiratory Protection |
| o Other Protective Equipment | o Chemical Name (Hazardous Components) |

Safety and health professionals may use the data in HMIS as a tool when making decisions affecting worker safety. The safety specialist may use data elements such as lower explosive limit, upper explosive limit, flash **point**, storage code, or other physical characteristics to make decisions on the adequacy of the facility, material handling equipment, and procedures affecting life and property. The industrial hygienist and bioenvironmental engineer may use the list of chemical components and the chemical formula in the HMIS when evaluating the health hazard potentials of hazardous materials as they are used in the workplace. This information is also used to develop a sampling strategy for evaluating workers' exposures to potentially hazardous materials and for recommending solutions to reduce the health hazards. During an emergency spill, the chemical and physical characteristics provided in the HMIS could be vital when advising spill team members on control measures necessary to protect their health and conduct cleanup with minimum risk.

The identification of hazardous components and their TLVs, the vapor pressure of the item, and recommended personal protective equipment are vital data that assist you in making decisions that affect worker safety. For example, on a routine survey of the motor shop on your facility you learn that a new solvent is being used to clean metal parts. Air samples are needed to determine if conditions exceed the permissible exposure level (PEL). You **can** refer to the HMIS for information on product ingredients and the personal protective equipment recommended by the manufacturer. With this information, you can sample properly to evaluate worker exposure and check to see if the proper personal protective equipment is used. You may also receive a call from the supervisor at a recoument facility who requests guidance in selecting the proper, 'respiratory protection equipment that personnel should wear when recouping a specified item; you can refer to HMIS for information on the product, its hazards and properties. You can then question the supervisor about the conditions under which recoument will occur, check recommended personal protective equipment listed in HMIS, and use your expertise to provide sound suggestions to assure that proper procedures are followed.

FUNCTIONAL AREA: STORAGE AND HANDLING

The people working in the storage and handling area who are most likely to use HMIS are those with supervisory responsibilities. They are the ones



HMIS can be used to help make decisions on where to safely store hazardous items.

who decide where an item is to be stored. The packers need to know some of the transportation regulations. However, the paperwork that packers receive from the transportation section should contain the information needed to properly prepare an item for shipment.

As a storage supervisor you must decide, on a daily basis, where to store quantities of various hazardous commodities as they arrive. You must be aware of an item's characteristics before-you can select the most appropriate storage location. The HMIS is a valuable resource. It provides you with most of the information you need, including storage compatibility codes, flash points, conditions to avoid, and materials to avoid if questions arise concerning proper storage. The data in the **HMIS** also can provide guidance to storage and handling personnel responsible for assuring adherence to loading compatibility guidelines.

Storage and handling personnel find the following data elements of most value:

- o Unit of Issue
- o Type of Container
- o Item Name
- o Chemical Name (Hazardous Components)
- o IATA Class
- o Hazard class Label(s)
- o **Flash Point**
- o Storage Code
- o Appearance and Odor
- o DOT Class
- o **IMO Shipping Name**
- o **AFR 71-4 Class**

FUNCTIONAL AREA: TRANSPORTATION

People working in the transportation sector require the information needed to properly prepare and, where required, certify a package (and paperwork) for shipment. Data needed include the proper shipping name, required labels, unit of issue, shipment weight, containers, packing restrictions, and shipping restrictions based on the required mode of transportation. All of this information is available under the "Transportation Data" heading.

- o Unit of Issue
- o Unit of Issue Container **Quantity**
- o Type of Container
- o Net Unit Weight
- o Limited Quantity Indicator
- o Exemption Number
- o Chemical Family
- o DOT Shipping Name
- o DOT **Class**
- o DOT Label(s)
- o Mode Indicator
- o **UN/NA** Number
- o Reportable Quantity
- o IMO Shipping Name
- o **IMDG** Page Number
- o United Nations class
- o Subsidiary Risk Label(s)

- o Ammunition Compatibility Group
- o AFR 71-4 Label(s)
- o **IATA** Shipping Name
- o **MMAC** Indicator
- o IATA **Class** or Division
- o Technical Entry for **N.O.S.**
- o IATA Label(s)
- o Shipping Name
- o AFR 71-4 Shipping Name
- o Additional Data
- o AFR **71-4** Class
- o Flash Point

•

How can the HMIS help you do your job? If you work as a transportation classifier, you check the information provided on Material Release Orders (**MROs**) and fill in the required transportation information. So, if a military facility in Europe orders two 5-gallon cans of acetone, NSN 6810-00-184-4796, you can check **HMIS** to find the proper **IATA** Shipping Name (acetone), required labels (flammable liquid), flash point (**4F**) and the United Nations Number (1090). The HMIS may also tell you that 5-gallon containers of acetone are not permitted on passenger aircraft but can be shipped on cargo aircraft. Likewise, if it is your responsibility to certify shipment of dangerous goods, you need this same information.

AUTOMATIC DATA PROCESSING APPLICATIONS

The HMIS microfiche are generated from computer tapes. These tapes are available to HMIS users who have automatic data processing (**ADP**) capabilities. The **HMIS** tapes can be helpful if you have ready access to a computer and terminal or to a minicomputer. The tapes **allow** for the manipulation of the HMIS data in ways that best serve individual user needs. To find out how you can receive the tapes, contact your focal point (Appendix A).

Few, if any, facilities have a need for information on every item in **HMIS**. You can use the tapes to create a file of items that your facility uses. You can then create other files that contain just the information you need. For example, an industrial hygienist or bioenvironmental engineer may desire to track certain high-hazard items. Computer programs can be written that allow those individuals to know which shops use the items, how much is used, the names and telephone numbers of supervisory personnel in those shops, and information on any potential exposure problems that may exist.

Personnel records can be combined with HMIS data to help maintain individual exposure records including average daily exposure and overexposure due to inadvertent contact with specific hazardous materials.

Shipboard supply officers or safety personnel can use programs specially designed to maintain up-to-date inventories of selected hazardous materials.

As you can see, ADP applications of the information in HMIS are numerous. Your use of the magnetic tapes is only limited by the hardware you have access to and the programs you are able to write.