



Hazardous Materials Program Development Tiger Team

INTRODUCTION

With its Headquarters at Fort McCoy, Wisconsin, the 88th Readiness Division's (88RD) mission integrates capabilities with Reserve Commands to provide geographic programs and services that enhance individual and unit readiness, mobilization, and deployment of Army Reserve Forces. To accomplish the Mission, the RD provides more than 2500 Military, civilian and contract employees to support over 525 Units consisting of over 51,000 United States Army Reserve (USAR) Soldiers and Families who are regionally dispersed in 277 Managed Sites comprising of over 18.5 million acres within its 19 State area of responsibility (AOR).

With a mission that includes enhancing readiness, mobilization, and deployment of Army Reserve forces, the 88RD stores, repairs and services all vehicles, weaponry and other military equipment assigned to units stationed within the 88RD AOR. Repairs and maintenance of such a wide variety of equipment requires the authorized purchase and compliant management of a vast amount of hazardous materials (HM) including items such as windshield wiper fluid, brake fluid, lubricants, paints, epoxies, and cleaners to name a few. In addition to the HM required for equipment maintenance, the 277 sites in the 88RD AOR also requires HM for facility cleaning and maintenance, such as toilet bowl cleaners, pesticides, floor cleaners, and more.

Because of the large and diverse demographics of the 88RD AOR, its ability to ensure only authorized HM products are procured, and that each product is properly managed, and has an easily accessible and up-to-date Safety Data Sheet (SDS) has been a formidable undertaking for several years leading to difficulties in adequately managing HM and ensuring compliance with all legal, Army, and Department of Defense (DoD), and other requirements. Also, through discussions with the Office of the Chief of Army Reserve (OCAR), Army Reserve Installation Management Directorate (ARIMD), and other Readiness Division Environmental Program managers, it was determined that issues addressed in this nomination are USAR-wide.



The 88RD Environmental Division (ED) is operated under the Directorate of Public Works (DPW). The ED consists of 4 primary Branches: Conservation, Compliance, Pollution Prevention, and Training and Assessments. This nomination for Environmental Quality – Individual/Team is for the development of a hazardous material management program tailored to the unique demographics of all USAR RDs by a Tiger Team of members comprised of all four ED Branches, Department of the Army Civilian (DAC), Gryphon Environmental, LLC service contract employees, the G4-Directorate of Logistics (DOL), and the Safety and Occupational Health Office (SOH).



The coordinated effort and determination of the Team to gather and input all HM locations, types, and associated Safety Data Sheets (SDSs) from all facilities supported by the 88RD was

daunting. The work they did to arrange meetings with Facility Managers and other personnel, record all HM in each facility across 19 88RD states, find missing SDSs, and enter all HM information into a database was done in addition to their normal duties, which include site assistance visits (SAV) covering all environmental media areas, responding to questions and emergencies, providing training material, preparing reports, conducting inspections, and arranging for hazardous waste (HW) disposition.

BACKGROUND



An effective HM Management Program is critical for protecting employee health and safety, securing conformance with green procurement and waste minimization policies, and ensuring compliance with Department of Defense (DoD) and Department of the Army (DA) regulations, as well as federal laws including the Occupational Safety and Health Act (OSHA), the Emergency Planning and Community Right-to-Know Act (EPCRA), the Resource Conservation and Recovery Act (RCRA), the Toxic Substances Control Act (TSCA), the Clean Air and Clean Water Acts, and the separate requirements of each of the 19 States in which the 88RD operates.

HM management across the USAR has been an issue for several years. More specifically within the reporting cycle for this nomination, between 1 October 2021 and 30 September 2023, 88RD Internal Environmental Performance Assessment System (EPAS) inspections identified 886 discrepancies related to HM management. Of those findings, 319 (64%) focused on missing or outdated HM inventories and Safety Data Sheets (SDSs) and in most cases were determined to be the root cause for the other 567 findings for improper storage, container labeling, and shelf-life management.

Over the years, numerous attempts have been made to conform with Army Environmental and Material Management regulations requiring establishment of centralized HM Control Centers to facilitate streamlined HM management processes from acquisition to disposition within the USAR. These requirements are quickly achievable on an Installation that operates and manages its HM within the parameters of a fence line. But for the USAR, the management of HM at so many remote sites sprawled over a broad geographic region was problematic.

The 88RD ED Chief determined that a centralized database of all HM used by the RD, sortable by unit/organization, site, and each specific storage location would be a first step in resolving the issues related to HMI management. He established a Hazardous Material Program Development Tiger Team and challenged them to devise a process where any HM at any facility would have access to SDSs for every product in the HMI. To accomplish this the Team had to literally “think outside the box” to create a process that is capable of functioning beyond a typical single installation fenceline.



To ensure efficient and accurate establishment and effective operation of a new database, the ED Chief chose VelocityEHS SDS and Chemical Management Software, an off-the-shelf database system already populated with hundreds of thousands of SDSs, flexible hierarchical storage frameworks, ad hoc reporting, and an Emergency Planning and Community Right-To-Know Act (EPCRA) module. Next, all members of the ED had to be engaged to do the data collection and entry, as well as the awareness campaign in addition to their normal duties. Personnel in the

88RD ED understood the importance of better managing HM and volunteered from across the three primary units.



As the individuals who visit sites the most, the Regional Environmental Protection Specialists (REPS), as part of the Environmental Compliance Assistance Unit, were key to ensuring success. Unfortunately, with their regular duties of providing environmental support for all media areas, the work could not be accomplished by them alone in time to reduce risks from improper HM management, including potential regulatory compliance issues. Understanding this challenge, the Storage Tanks Manager (Compliance Unit), Integrated Pest Management PM (Conservation Unit), Toxic Substances PM (Compliance Unit), and EPCRA/HM PM (Compliance Unit), and the Pollution Prevention PM agreed to help with data collection and entry. Coordination was made with the G4/DOL and SOH representative to ensure less hazardous HM procurement requirements and OSHA safety requirements were not only met but improved upon. The efforts and expertise required to meet the system development challenges were so far reaching they included the help of a young college student who provided the knowledge and ability for the use of a Quick Response (QR) code. The Team eventually included the members in the table below.

Contributing Team Members

Team Member	Position	Employing Organization
Edward Tebo	Environmental Division Chief	88RD (CIV)
Tim Gelhaus	Compliance Branch Chief	88RD (CIV)
Dave Torgersen	Gryphon Environmental LLC Program Manager	Contractor
Katherine O'Neill	Pollution Prevention, EPCRA, and HM PM	Contractor
Martin Pansch	Storage Tanks and Spill Prevention Control and Countermeasures PM	Contractor
Steven Bragg	Integrated Pest PM	Contractor
Kristin Cleveland	Toxic Substances PM	Contractor
Michelle Holtom	REPS	Contractor
Tony Bridges	REPS	Contractor
Andrea Pawlik	REPS	Contractor
Molly Stearns	REPS	Contractor
Todd Nestegard	REPS	Contractor
Jennifer Cummings	REPS	Contractor
Jennifer Allen	REPS	Contractor
Sara Hecht	REPS	Contractor
Amy Lord	REPS	Contractor
Imelda Kelley	REPS	Contractor
Laura Achterberg	REPS	Contractor
Jason Sikorski	G4/DOL Regional Maintenance Manager	88RD (CIV)
Brian Russell	Safety and Occupational Health Manager	88RD (CIV)
Joshua O'Neill	Systems Consultant	Student

ACCOMPLISHMENTS



In addition to their regular duties of providing compliance and operational assistance to their assigned sites, the REPSs and other Tiger Team members took inventories of and entered data for more than 189,000 instances of 6,600 different types of HM. Each entry included name of vendor, product, weight, units, location, date inventoried, and type and number of containers available at the location, as well as finding and adding the SDS to each record.



1. The entered data was checked for quality and accuracy and arranged into a centralized HM database by state, site, building, and locations including more than 3,000 specific flammable cabinets, rooms, cages, and other HM storage areas, with attached SDSs for each item, which are electronically accessible by simply scanning a Quick Response (QR) code placed at each storage location.



2. As a research and development project for his degree program, a college student wrote a computer program to develop QR codes for all storage locations of HM at the RD. These QR codes are used to access HM SDSs and inventories quickly and easily, saving time and money.



3. The geographically centralized Hazardous Materials Inventory (HMI) also serves as an enterprise-wide Authorized Use List (AUL), and a consolidated data base EPCRA reporting and for identifying product substitutions in support of RD Safety and Pollution Prevention (P2) programs and other waste minimization initiatives.



4. Since the Base years of FY and FY 22 the average number of HM findings observed during internal EPAS inspections have been reduce by 82%



5. The demographics of the USAR are not like those of a standalone Installation that typically manages its HMI and SDS compliance requirements through a centralized Hazardous Material Control Center (HMCC) or using an Army enterprise HM management database such as HMIS. The 88RD created HMI and SDS management system could easily be established throughout the entire USAR and eliminate thousands of unaddressed HM regulatory compliance issues identified during EPAS inspections, improve safety conditions at each site and enhance readiness by better resource management.



6. The utility of the database has already been proven by using ad hoc reporting to identify and correct 50 instances incompatible storage of compressed gas cylinders.

PROGRAM MANAGEMENT



Before implementing the HM database, HM management was haphazard at the 88RD, due to the large geographical distances of 88RD facilities, high operations tempo, and frequent personnel rotations. Despite training efforts, reorganization of materials, and site assistance visits, REPs noticed poor management methods return again and again. The need to automate was key, as managing HM is only one part of the duties of personnel who need the material to do their jobs, and the ED's consideration of mission support means freeing up time for more military training.

Establishment of a centralized, easily accessible HM database to manage and update HMIs and to store SDSs has proven to be the solution for large, separated geographical locations for maintaining safety and meeting the full spectrum of regulatory compliance. An approach that after an initial and data entry will require minimal resources for future monitoring and management. The centralization of the system saves time and money by reducing or eliminating

the need to page through a large, often five inch binder of SDSs; instead, personnel simply scan the QR code and all the SDSs for HM located in their storage location are available online. Additional savings are seen in providing virtual HMIs instead of paper copies that require updating in a system, printing out, and posting at the storage location. Estimations of time savings of approximately 40 hours per year per facility have been calculated. At an E5 rate of \$31.00 per hour, 40 hours per year over 277 sites equates to a savings of more than \$343,000 per year. This is time and money better spent on training.

-  The ED Chief identified the need for a more structured approach for HM management within the 88RD and a requirement to create the Pollution Prevention Branch within the ED. The opportune time to meet this need was during the solicitation period for the renewal of the RD's Environmental Services Contract. As preparation for the solicitation, the scope of work for a previous contract was modified to add a Hazardous Materials Program Manager (HMPM) to lead the P2 Branch, and to manage the new HMMP requirements, determine HM storage hierarchy standards, train personnel, and orchestrate the efforts for the development of the new database and HM management program.

The HMPM and the Training and Assessments Team Manager formed the 88th Readiness Division Hazardous Materials Program Development Team to complete the critical task of completing a 100% HMI of more than 3000 storage locations at 277 USAR sites within its 19-state AOR in the first year of the new Environmental Services Contract. After completing the HMI, the Team populated the HMI in the system, attaching an SDS for each item, creating a visible 88RD-wide AUL with a repository of SDSs immediately available to meet several EPA, OSHA, and separate state regulatory requirements.



MISSION SUPPORT



103rd Expeditionary Sustainment Command training for Operation Cactus Gunnery. Managing HM properly supports training through vehicle maintenance and personnel safety.

Training and mobilizing troops require use of heavy machinery and vehicles, which all need lubrication, touch up paint, adhesives, coolants, and other HM. Managing the amounts and varieties of HM at a large vehicle maintenance facility is an arduous task with risks to the environment and personnel, impacts on the budget, and concerns over preventing regulatory findings.

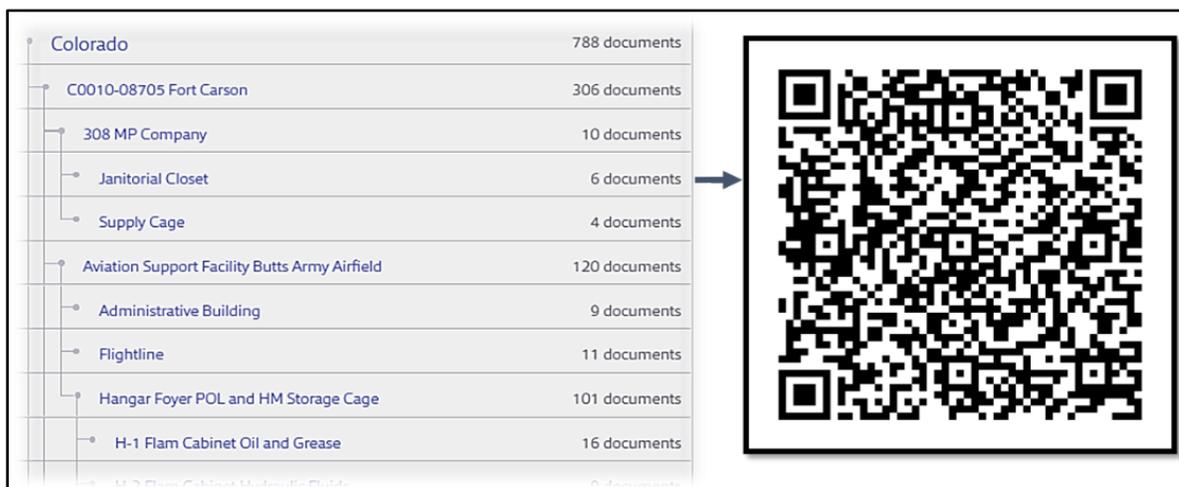
-  To access HMIs and SDSs quickly, the Tiger Team developed a method outside of the database's capabilities whereby each HM storage location and level has an assigned QR code for immediate retrieval of SDSs and inventories. The QR code for the

location never changes, even when products do. Printing of QR codes may be done for all five location levels in the HM database.



Accessing information is faster using QR codes than accessing it using a computer. Typically, using a computer in a vehicle maintenance and repair shop requires logging into the computer using a security card, then accessing the internet, then going to the HM database to search through millions of SDSs or finding the proper location among 3,000-plus locations and finally accessing the HM. Scanning a QR code that leads a site-specific product list reduces time searching for a product's SDS online or searching through a physical SDS binder that might contain hundreds of SDSs. The QR code may be tried now to view the HMI and SDSs within the database by using the following steps:

1. To access the HMI for 6 products stored in the Janitorial Closet at 308 MP Company's building operating at CO010 Fort Carson in Colorado:
 - a. Use a cell phone in camera mode and scan the QR Code.
 - b. Select the link provided.
2. To obtain an electronic copy of the SDS for the Sealant Brushable Seam Sealer Gray, touch the Globally Harmonized System (GHS) icon to the left of the product name and open or/download the SDS for immediate viewing .



Barcode for the Janitorial Closet at 308 MP Company's building operating at CO010 Fort Carson in Colorado.

ADDITIONAL BENEFITS

Using an HM database for a widespread region with numerous activities has more benefits than those already described. The database can provide data to determine EPCRA reporting requirements, reveal locations that have excess material stocks to prevent material expiration, increase waste minimization, support product substitution decisions to meet Executive Order pollution prevention directives, and to ensure that only the safest products are used to meet maintenance and mission requirements. The database's ad hoc reporting system can also be used to find locations that overstock HM and reveal use of products that contain the most

environmentally dangerous chemicals for identification of materials to be included in a restricted use list (RUL).

Other information related to required personal protective equipment (PPE), emergency response actions, material storage and labeling requirements are now more easily trainable by SOH and Environmental staff with Soldiers and other customers who may be several hundred miles away via telephone and TEAMS meetings. Travel costs per site visit by ED staff average \$600 per trip. If each REPS reduces one visit due to the electronic HM system, cost avoidance of \$72,000 in travel expenses can be achieved.



The HM Program Management system was developed using easily transferrable technology within the 88RD and available to other Reserves components, State Guards, the Coast Guard, and any enterprise with responsibility for managing HM over a large region with numerous facilities. The technology uses flexible data entry to populate site HM inventories with attached SDSs. Built-in ad hoc reporting supports development of an enterprise wide AUL, determinations of use for sustainable products and where substitutions for those products can occur, identification of where products might be stored improperly, EPCRA reporting, and eventually many other uses.

STRATEGIES FOR THE FUTURE



The 88RD HM database is fully populated, so the ED and HM Program Manager can move to a phase where cost avoidance can be calculated. Analyses using the database reporting system will allow for monitoring of product expiration dates to ensure shelf-life extensions and redistribution of products that are over-orders or are mistakenly procured. The HM Office is currently using the newly developed HM database to establish a HM redistribution program, working to educate personnel on expiration dates and shelf-life extensions, and researching product substitutions. The HM Office and centralized management of the RD-wide HM database has become a comprehensive virtual hazardous materials control center that partners with the REPS, the Safety Office, the Directorate of Logistics, Contracting, and shop-level personnel to ensure the best management of HM possible for a complex web of locations and materials used.

CONCLUSION



A database of all HM used by a geographically spread RD was developed by the 88RD Hazardous Materials Program Development Tiger Team. The HM database provides cost and time savings, as well as easier EPCRA reporting, chemical searches for product substitutions, and review of items stored together for enhanced safety. The technology is transferable to other Reserves components, State Guards, the Coast Guard, and any enterprise with responsibility for managing HM over a large region with numerous facilities. The HM database was set up to be accessible using site-specific QR codes, allowing for rapid acquisition of the correct information in emergencies and other situations. Once the HM database was populated, 82% of the HM findings were not recorded again, based on availability of inventories and SDSs, as well as the process of inventorying, which revealed several root causes that were quickly corrected.