A STREAMLINED APPROACH TO MANAGEMENT OF INVESTIGATION-DERIVED WASTES

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ABSTRACT

To streamline the management of wastes generated during the RCRA Facility Investigation at the Portsmouth Gaseous Diffusion Plant in Piketon, Ohio, an electronic waste-management database was developed using commercially-available software (dBase IV). During field operations, each drum of waste was assigned an identification number. This identification number was entered into the database on a daily basis along with information regarding the drum type, drum content (solid/liquid), sampling location(s) and date, staging location/date and anticipated classification (a hazardous/non-hazardous classification was estimated based upon field screening results). The Waste-Management Database was digitally linked to a database containing analytical results for all samples collected during the investigation. The waste-management database was used to generate daily status reports which included critical information regarding the total volume, location and type of wastes present on site. The report also included prompts which indicated which wastes were approaching the site 72-hour staging deadline or 90-day storage deadline. This database system, which allowed for streamlined and efficient management of investigation-derived wastes at this facility, could also serve as a model for investigations at similar facilities.

INTRODUCTION

Successful management of investigation-derived wastes on large-scale projects can be difficult to accomplish because of the logistical elements associated with the large volume and high rates of generation of wastes. These problems were encountered during the RCRA Facility Investigation at the Portsmouth Gaseous Diffusion Plant where over 1,000 investigatory boreholes and monitor wells have been installed since 1989. Aggressive regulatory schedules required the use of up to ten drilling rigs during a single phase of investigation with each drill rig generating up to five 55-gallon drums of waste per boring location. Several more drums of liquid waste were generated during well development and well purging prior to sampling where boreholes were converted to monitoring wells.

To meet regulatory and Department of Energy requirements, suspected hazardous wastes had to be staged within 72 hours of generation and transported to a permitted RCRA storage facility prior to the 90-day storage deadline.

An electronic waste-management database was developed using commercially-available software (dBase IV) to track collection and storage locations and integrate waste-specific information with analytical results. The database also was developed to notify waste management personnel of approaching regulatory storage deadlines. Successful implementation of the waste management database required a user-friendly interface for data entry by field personnel, setup of the database into useable data fields, digitally linking the waste-management database to an analytical results database and the generation of usable daily status reports with prompts for meeting regulatory deadlines.

Data Entry

Field staff assigned and labeled each drum with a unique identification number for tracking. This number was called a request for disposal (RFD) number. Each drilling location had several RFDs and in some cases one drum (one RFD) could have several locations associated with it if waste was derived from different locations (i.e. drums containing personal protective equipment from several locations). Additional data unique to the drum were also gathered in the field. Field personnel entered data into the database on a daily basis at a field office location. The database interface prompts personnel for entry of data into appropriate fields (Fig. 1). Data entered includes: RFD number, date drum was filled, waste origin (well or boring identification), if waste matrix is soil - whether it was taken from above or below the water table, location where the drum was staged, quantity of RFDs (drums) from the same origin (e.g., 1 of 3), type of drum (bung hole or removable top), matrix (soil or water), date staged, date analytical results were validated, preliminary waste management description (hazardous/non-hazardous based on field screening results), final waste management description (following analytical results validation), and comments.

Analytical Results

Analytical results for the RCRA Facility Investigation included Appendix IX results for water samples and Target Compound List and Target Analyte List (TCL/TAL) results for soil samples. Analytical results were received from the analytical laboratory electronically. Analytical results were validated at Geraghty and Miller's Level III data quality objectives (between EPA Level III and CLP). Validated data were entered into the analytical results database then digitally linked to the waste-management database. A Waste-Management Summary report was then produced from the waste-management database (Fig. 2).

Waste Management Report

The waste-management database was used to generate daily status reports which provide critical information for waste management planning. Waste Management Reports included information regarding total volume, location, and type of waste present onsite as well as prompts which indicated which wastes were approaching 30 and 60 days from origin of waste in order to meet the 90-day temporary storage deadline (Fig. 3).

CONCLUSIONS

This electronic waste-management database system resulted in streamlined and efficient management of high

Records Organize Go To Exit

GERAGHTY & MILLER, INC. - DATA MANAGEMENT RECORD
MARTIN MARIETTA ENERGY SYSTEMS - PIKETON, OHIO

RFD: 3594 ORIGIN: BKG-SB03

CORRECTED ORIGIN: BKG-SB03 STATUS: RFI

TYPE OF CONTAINER: BUNG HOLE TOP RELATION TO WATER TABLE: N/A

FILLED DATE: 03/07/91 STAGED DATE: 03/08/91 VALIDATED DATE: 05/07/91

MATRIX: LIQUID STAGING LOCATION: X-744G QUALITY: 1 OF 1

COMMENTS: DE-CON WATER WITH ANTI-FREEZE (1/2 FILLED)

FIRST NOTICE: 04/07/91 SECOND NOTICE: 05/07/91 FINAL NOTICE: 06/06/91

PRELIMINARY WASTE MANAGEMENT DESCRIPTION: HAZARDOUS
FINAL WASTE MANAGEMENT DESCRIPTION: PENDING

Fig. 1. Data-entry form.

RFD NO: 9202

SAMPLE LOCATION: X326-04G

ANALYTE	VALUE/QACODE	PQL	UNITS	VALID
CHLORINATED DIOXINS				
No analytes were detected for this category.				
HERBICIDES				
No analytes were detected for this category.				
METALS				
BARIUM	51J	10	ug/l	Y
VANADIUM	43	10	ug/l	Y
ZINC	130J	20	ug/l	Y
ZINC (DISSOLVED)	47	20	ug/l	Y
PESTICIDES/PCB's				
No analytes were detected for this category.				
SEMIVOLATILE ORGANICS				
BIS (2-ETHYLHEXYL) PHTHALATE	1.6j	10.0	ug/l	Y
VOLATILE ORGANICS				
No analytes were detected for this category.				

Fig. 2. Waste management summary quadrant III ground-water analytical results Portsmouth Gaseous Diffusion Plant, Piketon, Ohio.

volumes of investigation-derived wastes at this facility. This database system could serve as a model for management of investigation-derived wastes for similar-scale investigations at other facilities. The ability to link the waste management database to analytical results databases can help determine the disposal options for each drum. The database is flexible enough to be modified to support special site requirements.

RFD NO.: 3596 QUANTITY: 1 OF 2
TYPE: REMOVABLE TOP MATRIX: SOIL
ORIGIN: BKG-SB03 RELATION TO WATER TABLE: ABOVE
DATE FILLED: 03/07/91 DATE STAGED: 03/08/91 DATE VALIDATED: 05/07/91
DATE OF FIRST NOTICE: 04/07/91 DATE OF SECOND NOTICE: 05/07/91
DATE OF FINAL NOTICE: 06/06/91
PRELINARY WASTE MANAGEMENT DESCRIPTION: NON-REGULATED
FINAL WASTE MANAGEMENT DESCRIPTION: PENDING
COMMENTS: SOIL CUTTINGS FROM SURFACE TO 15 FEET

RFD NO.: 3596 QUANTITY: 2 OF 2
TYPE: REMOVABLE TOP MATRIX: SOIL
ORIGIN: BKG-SB03 RELATION TO WATER TABLE: ABOVE
DATE FILLED: 03/07/91 DATE STAGED: 03/08/91 DATE VALIDATED: 05/07/91
DATE OF FIRST NOTICE: 04/07/91 DATE OF SECOND NOTICE: 05/07/91
DATE OF FINAL NOTICE: 06/06/91
PRELINARY WASTE MANAGEMENT DESCRIPTION: NON-REGULATED
FINAL WASTE MANAGEMENT DESCRIPTION: PENDING
COMMENTS: SOIL CUTTINGS FROM SURFACE TO 15 FEET

RFD NO.: 3597 QUANTITY: 1 OF 1
TYPE: REMOVABLE TOP MATRIX: SOIL
ORIGIN: BKG-SB03 RELATION TO WATER TABLE: BELOW
DATE FILLED: 03/07/91 DATE STAGED: 03/08/91 DATE VALIDATED: 05/07/91
DATE OF FIRST NOTICE: 04/07/91 DATE OF SECOND NOTICE: 05/07/91
DATE OF FINAL NOTICE: 06/06/91
PRELINARY WASTE MANAGEMENT DESCRIPTION: NON-REGULATED
FINAL WASTE MANAGEMENT DESCRIPTION: PENDING
COMMENTS: SOIL CUTTINGS FROM SURFACE TO 15 FEET

Fig. 3. Geraghty and Miller waste management report, Martin Marietta Energy Systems, Piketon, Ohio.