

The SRS Waste Inventory Management Program (U)

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The Savannah River Site Waste Inventory Management Program

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Introduction

Each hazardous and radioactive waste generator that delivers waste to Savannah River Site (SRS) treatment, storage and disposal (TSD) facilities is required to implement a waste certification plan. The waste certification process ensures that waste has been properly identified, characterized, segregated, packaged, and shipped according to the receiving facilities waste acceptance criteria. In order to comply with the rigid acceptance criteria, the Reactor Division developed and implemented the Waste Inventory Management Program (WIMP) to track the generation and disposal of low level radioactive waste. The WIMP system is a relational database with integrated barcode technology designed to track and inventory radioactive waste. During the development of the WIMP several waste minimization tools were incorporated into the design of the program. The inclusion of waste minimization tools as part of the WIMP has resulted in a 40% increase in the amount of waste designated as compactible and an overall volume reduction of 5,000 cu-ft.

Waste Container Control

Waste containers, usually 90 cu-ft steel boxes, are issued to a responsible individual within a work group. The individual must have successfully completed a four hour training session on waste handling and waste minimization prior to taking custody of the container. The WIMP maintains a record of all personnel that have completed training and will not allow a waste container to be issued to unauthorized personnel. The WIMP captures all pertinent information about the individual and the specific job being worked on an issuance form. This form includes the work package number which allows the containers to be tracked to a specific person and job. The container is assigned a unique barcode number allowing information regarding the container to be easily retrieved if necessary. If more than three containers are issued to an individual or job within a specified length of time, WIMP will provide a prompt to the operator indicating an informal waste minimization surveillance should be conducted. Each individual responsible for a container is provided with a list rules pertaining to the use of the container. These rules include several waste minimization techniques. The rules are listed on the issuance form which the user is required to sign.

Waste Tag Entry

As waste is generated, the individual sealing the bag fills out and attaches a Radioactive Waste Tag. The tag has a unique number which allows the bag of waste to be tracked to a container. The waste tag captures information concerning the bagged waste including; type of waste, contents, location generated, packager, work package number, waste stream number, and ID number of the container the waste was placed in. The waste tag requires the generator to determine if the waste is compactible or non-compactible. The bottom of the waste tag is detached and collected to be entered into WIMP to form the contents or "waste cuts" of each waste container.

Container Inventory

After the waste container is full, custody is returned to the Waste Management Group for storage and shipment. The individual returning the container must review a container certification form, which lists the complete contents of the container. The user signs the form indicating that no hazardous waste or other prohibited items were placed in the container. Waste management personnel inspect the container for fullness and stores the container if necessary. If the container is not full, it will be reissued to a job utilizing the same waste stream. Periodic inventory as well setting up for shipment is conducted using a portable barcode reader.

Other functions of the WIMP include manifesting, sorting, querying, and report generation.

Utilizing WIMP for Waste Minimization

As discussed earlier, several waste minimization program initiatives were designed and incorporated into the design of WIMP. These initiatives included activities which lead to waste minimization through source reduction and reuse/recycling.

Source Reduction

As part of the job planning process for maintenance and construction projects, each work package developed is reviewed specifically for waste minimization using a checklist provided to planning personnel. The checklist asks the following questions (abridged) concerning waste generation.

- * Will the activity use a hazardous chemical?
- * Will the activity involve the disposal of the waste that is constructed of or comes in contact with hazardous constituents?
- * Will the activity result in generating greater than 1 B-25 (90 cu-ft) of radioactive waste?
- * Will the activity involve creation of a new waste stream or the modification of an existing waste stream?
- * Will the activity involve the removal of equipment or material that can be salvaged for recycling or reuse?

In addition to maintenance and construction projects, a specific checklist has been developed for environmental restoration activities. This checklist is completed by the project manager prior to beginning field investigations or remedial projects.

If any of the criteria contained on the checklist are applicable, the work package must be reviewed by the Waste Management Group. During the waste management review, a specialist works with the actual work group on how to effectively minimize waste being generated. In addition, the Waste Management Group is alerted to any generation of hazardous/mixed waste so that substitutes can be identified, or if generation is unavoidable, the proper collection can be set up. It is important to note that the total work group, not just the Waste Management Group, is actively involved in waste minimization planning. The Waste Management Group maintains a record of all work packages that have been reviewed. This information is then entered into the WIMP. The WIMP can then be used to generate reports detailing the amount and types of waste generated during the performance of the work associated with each work package. This information is used in the planning process of projects that are the same and/or similar in scope.

Recycle/Reuse

The WIMP has also been used extensively in the radioactive scrap metal program. The WIMP is used to track characterization data associated with preparing radioactive scrap metal for processing. As metal is cut into pieces, each piece is tagged. These tags include information such as the origin of the metal and the sample identification number associated with that particular piece of metal. As the metal is placed in the shipping container, the bottom portion of the tag is removed. The information contained on the tag is entered into the WIMP. A detailed inventory of each container is produced which is used for curie content determinations and shipping information.

Design and Implementation of the WIMP

The WIMP was developed using a Macintosh® based relational database called 4th Dimension®. The WIMP was designed and developed over a six month period which includes two months of intense programming efforts. Full implementation of the program was accomplished in four months. The four month implementation period included training for all waste generators such as operations, construction, maintenance, and work planning personnel. A major challenge in developing a waste tracking database is incorporating the elements of control and accountability while maintaining the ability to perform work in a timely and cost effective manner. The goal of the program is to accurately track the generation and disposal of waste without an excessive administrative burden being placed on workers. This was accomplished by use of the waste tracking tag. This program places significant responsibility and accountability on the generator of the waste. Although resistance was encountered at first, generators have accepted this new responsibility. This acceptance can be accredited to management support and effectiveness of the training provided to support the program.

Summary

The WIMP has proven to be effective electronic means to accurately track the generation and disposal of low level radioactive waste. The WIMP is primarily used by the Reactor Division at SRS but has been adapted for use at the chemical separation facilities; high level waste tank farms; decontamination and decommissioning; and environmental restoration projects. Current plans are to incorporate hazardous and mixed waste into a similar program and integrate the WIMP with a waste generation forecast database program. Through implementation of the WIMP, projects are pre-planned with waste minimization activities included, ownership of containers is transferred to individuals who are trained to effectively control the contents of their container, and a database is maintained which provides historical data for use in evaluating future waste generating activities.