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Waste Management, Environmental Compliance and Pollution Prevention
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ABSTRACT

The Waste Management and Environmental Compliance Group within the Nuclear Materials Technology (NMT) Division is responsible for managing all waste generated in NMT facilities from operations with, or that support actinide processing. These operations result in the generation of a variety of waste forms, from sanitary and salvage to radioactive, hazardous and mixed waste.

Waste management activities are controlled by a number of prescriptive DOE Orders, Federal and State regulations, waste acceptance criteria, Laboratory requirements documents and standard operating procedures. For instance, waste operations with materials that contain regulated levels of hazardous constituents must observe the requirements of the Resource Conservation and Recovery Act (RCRA), and materials that contain Special Nuclear Materials (SNM) must be controlled in accordance with the Atomic Energy Act of 1954 and amendments. The program is designed to implement these requirements and personnel are trained and certified to perform their job functions in accordance with the regulations. An integral quality assurance program insures that program documents implement regulations and that operations are conducted in accordance with program documents.

Waste management operations must control the radiological, chemical and physical hazards associated with the management of waste. Personnel are trained to identify and mitigate these hazards in their daily activities. A successful waste management program depends upon a knowledgeable and cooperative generator population. This relationship forms the basis for proper characterization of waste materials and establishes effective waste avoidance and waste minimization.

The proper management of waste requires a robust, yet flexible program in order to effectively adapt to rapidly changing missions and regulations. A number of challenges to NMT waste operations have been addressed and overcome successfully, but many challenges remain to be resolved in the future. The NMT-7 Waste Management and Environmental Compliance Group strives to maintain their philosophy of providing an expedient, compliant and cost effective waste management program to NMT operations.

INTRODUCTION

Los Alamos is one of America's National Laboratories owned by the United States Department of Energy (DOE) and operated by the University of California (UC). The laboratory is one of the original Nuclear Weapons Complex Laboratories dating back to the Manhattan Project in World War Two. Consequently, research with radioactive materials has been conducted at Los Alamos for over half a century and remains one of the primary responsibilities of this institution. The Nuclear Material Technology (NMT) Division of Los Alamos National Laboratory (LANL) is responsible for the operation of two nonreactor nuclear facilities at Technical Area (TA) 3, the Chemistry and Metallurgy Research (CMR) Building, and at TA-55, the Plutonium Facility. These two facilities are essential to accomplish one of the Laboratory's core missions of Stockpile Stewardship of America's nuclear arsenal.

The activities at these two sites generate a variety of waste types from sanitary and salvage to radioactive, hazardous and mixed wastes. All of these materials must be handled safely and in accordance with a variety of rules and regulations governing the treatment, packaging, identification, storage, transportation and disposal of each specific type of waste.

The Waste Management and Environmental Compliance Group within NMT Division (NMT-7 Group) has the responsibility for conducting waste operations in a compliant, expedient and cost effective manner. This requires the close coordination of waste management activities with personnel from the processing groups and with personnel from the Laboratory waste management and regulatory support organizations.

There are several key factors which contribute to the success of the waste management program: The cooperation of a knowledgeable generator population with the specialists of the waste management group, is essential. This allows the use of Acceptable Knowledge (AK) where applicable to minimize the costs associated with characterization and allows for proper handling, segregation and storage of waste items. Collaboration in the planning phases of projects also allows the successful implementation of opportunities for waste avoidance and waste minimization with minimal impact and cost.

The waste management and environmental compliance programs are subject to intense scrutiny and frequent audits by regulators and disposal sites. The accuracy of data and the ability to track waste packages to the operations that produced the waste is fundamental to program certification and integrity. The waste management program has a strong, integral quality assurance function that provides an internal check of program integrity as well as compliance with 10 CFR 830.120, Quality Assurance Requirements and disposal site quality assurance plans.

REGULATIONS

A plethora of regulations control all aspects of waste management at Los Alamos. Various federal and state statutes, acts, regulations, orders and criteria are interpreted by internal Laboratory documents before being implemented at the operations level by standard operating procedures. Waste Management personnel are trained and certified to the operating procedures and various forms and databases are used to prompt the collection of documentation needed to characterize waste types and assure compliance with these regulations. An integral quality assurance program is used to verify program integrity and to identify and correct deficiencies.

The New Mexico Environment Department (NMED) regulates hazardous and mixed wastes under the New Mexico Administrative Code (NMAC) as adopted from the Code of Federal Regulations, Title 40 (40 CFR) implementing the Resource Conservation and Recovery Act (RCRA). NMED regulates asbestos waste under the NMAC also in accordance with 40 CFR implementing the requirements of the Toxic Substances Control Act (TSCA), but polychlorinated biphenyls (PCBs) are regulated in accordance with TSCA by the Environmental Protection Agency (EPA) Region 6. The transportation of hazardous materials, including waste, is regulated by the Department of Transportation (DOT) in 49 CFR. The NMED and EPA Region 6 jointly enforce liquid effluent discharges in accordance with the Clean Water Act and the National Pollution Discharge Elimination System (NPDES). NMED and EPA Region 6 also regulate air emissions in accordance with the Clean Air Act, with EPA taking responsibility for radioactive airborne emissions.

Department of Energy Orders also regulate the management of waste as specified in the University of California and Department of Energy Operating contract for the Los Alamos National Laboratory (W-7405-ENG-36). DOE Order 5820.2A, "Radioactive Waste Management" sets forth requirements for radioactive waste disposal and also reinforces the applicability of RCRA to hazardous constituents of mixed wastes. Hazardous waste is also subject to the Site Treatment Plan (STP) under the Federal Facilities Compliance Agreement (FFCA) established between the DOE and the EPA.

Waste Acceptance Criteria (WAC) is defined by disposal facilities such as the Waste Isolation Pilot Plant (WIPP) in DOE/WIPP-069 for transuranic waste to meet safe handing, transportation, RCRA operating and repository performance requirements for deep geologic disposal. Low-level waste is disposed of on-site by shallow land burial, also in accordance with siting criteria and emplaced waste must meet the LANL WAC.

The Special Nuclear Material (SNM) content of the waste must be controlled in accordance with Nuclear Material Control and Accountability (NMC&A) procedures in compliance with the Atomic Energy Act (AEA) of 1954 and Amendments. Waste contents must be assayed and the radioisotope content identified to satisfy WAC and DOT requirements as well as facilitating material accountability requirements.

Radioactive and hazardous wastes must be handled in a safe, responsible manner. An effective radiological protection program in accordance with 10 CFR 835, "Occupational Radiological Protection" must be implemented and waste management personnel certified as radiological

workers. Waste management personnel must have RCRA training as specified in 40 CFR 265.16 and Hazardous Waste Operations and Emergency Response (HAZWOPER) in accordance with 29 CFR 1910.120, the Occupational Safety and Health Act (OSHA). Chemicals must be handled safely and segregated so that no adverse reactions can occur, should there be spills or breaches of the containers. Many recent incidents at DOE sites have been the result of mixing incompatible wastes in the same container.

All of these regulations and requirements are interpreted as they apply to waste operations within the Laboratory in Laboratory Implementing Requirements (LIRs) and additional waste specific requirements documents:

LIR404-00-02.2, "General Waste Management Requirements"
LIR404-00-03.0, "Hazardous and Mixed Waste Requirements for Generators"
LIR404-00-04.1, "Managing Solid Waste"
LIR404-00-05.1, "Managing Radioactive Waste"
LIR404-00-06.0, "Managing Polychlorinated Biphenyls"
LIR404-10-01.1, "Air Quality Reviews"
LIR405-10-01.0, "Packaging and Transportation"
PLAN-WASTEMGMT-002-0.20, "Los Alamos National Laboratory Waste Acceptance Criteria"

Site specific documents for conduct of waste operations is the responsibility of the NMT-7 Group and includes program documents; for example CMR-PLAN-001, "CMR Waste Management and Environmental Compliance Plan" which provides an overall view of the requirements and the manner in which the waste management program is organized and implemented. It was intended to provide someone unfamiliar with the waste management program (an auditor for instance) with a basic understanding of the entire operation from regulatory drivers to where records are stored so that they could conduct their business more effectively. Safe operating procedures take requirements from LIRs and WACs and effectively apply them at the working level. For instance, CMR-SOP-007, "Facility Waste Management Requirements" was developed as a reference document to provide waste generators with the information that they need to know in order to prepare their waste for acceptance by waste management personnel. It is organized by waste type and contains flow charts walking the user through the entire process; i.e. what information is needed for characterization, forms required, packaging needed, marking and labeling, etc. Group safe operating procedures such as NMT-SOP-CMR-010, "Low-level Radioactive Waste" and its Work Instructions (WIs) are the documents that the technicians are trained and certified to in order to perform their work safely. Hazards inherent in waste operations are identified and actions are taken to eliminate or minimize them in the procedures. These procedures also implement the requirements of the LIRs and WACs at the working level to assure an acceptable product (fully certified waste package).

This discussion of regulations, although lengthy, is by no means all encompassing! It is intended to give the reader a feeling for the complexity of the current regulatory environment under which waste operations must be conducted at Los Alamos.

WASTE MANAGEMENT AND ENVIRONMENTAL COMPLIANCE

A wide variety of waste from actinide research, processing and analytical activities must be handled in an expedient, cost effective and compliant manner. This requires a basic understanding of regulations and the waste management process by the personnel conducting the activities which generate the waste. To accomplish this both a Laboratory and site-specific waste generator training course is conducted. Waste generators interact with NMT-7 personnel on a daily basis: whether it is the technicians who certify and handle waste packages, knowledgeable waste management coordinators who provide guidance to the generators or help them with paperwork, or with specialists in regulatory matters who recommend modifications to project designs in order to avoid regulatory pitfalls or shippers who verify DOT compliance of waste packages prior to shipping. Waste operations areas and permitted areas (Satellite Accumulation Areas (SAA), Less-than-90 Day Areas (<90) or Interim Permitted Storage Areas (TSD)) in the case of RCRA hazardous or mixed wastes, are clearly defined and situated to facilitate use by operations personnel as well as waste management technicians. Operations with hazardous materials are conducted in accordance with the Laboratory's RCRA Part A Interim Operating Permit.

A resident quality assurance specialist ensures that the integral quality assurance program is working as intended. This includes a self-assessment program and spot field audits per a surveillance matrix as well as performing desk top audits of program documents. Quality assurance performance indicators are tracked in order to identify any fundamental deviations in the waste management program as early as possible so that they can be corrected with negligible impact to program certification. Nonconformance Reports (NCRs) and Corrective Action Reports (CARs) are also tracked carefully. This level of support has proven invaluable in resolving quality issues that arise regularly with purchased products when vendors or suppliers are changed and the physical specifications of waste packages vary out of acceptable tolerance.

The heart of the waste management program is the records and waste documentation. All of this information must be kept in an orderly and retrievable manner as they are subject to regular inspection by regulators or disposal facility auditors. Many of these records that were condensed onto microfiche are now being transferred to compact disk.

Site environmental compliance officers interface with facilities personnel and the Laboratory environmental organizations: ESH-17 Air Quality, ESH-18 Water Quality and Hydrology and ESH-20 Ecology personnel. They keep files of data collected from sampling stations on site, keep copies of periodic reports, follow changing permit requirements, recommend changes to maintain compliance, do periodic inspections, keep plans up to date, assist in writing permits or revisions to existing permits, assist personnel with screening forms and submit information for National Environmental Protection Act (NEPA) review when required.

Waste minimization and pollution prevention activities are essential in keeping waste disposal costs under control, especially with an expanding mission and production role. Operations personnel are actively involved in preventing the generation of waste that is expensive or impossible to dispose of. Personnel know, for instance, not to take packaging materials into a radiological control area with new equipment or supplies so that they may disposed of as sanitary

waste instead of low-level radioactive waste (LLW). One successful project that has resulted in a significant reduction in low-level waste is "Green-is-Clean" which involves the segregation of paper from radiological control area and assay by sensitive phoswitch detectors to verify that contamination is not present. This effectively diverts a portion of the LLW stream to sanitary disposal and saves disposal costs. Waste management coordinators work with process personnel to substitute non-hazardous chemicals for hazardous chemicals in their operations. One example is the substitution of non-hazardous scintillation cocktail for those formulations containing tolulene in radioassay processes or the substitution of non-hazardous solvents for trichloro ethylene (TCE) in certain degreasing operations.

Waste minimization and pollution prevention goals are central in the UC/DOE Contract, Appendix F Performance Measures. These measures are very prescriptive in defining the level of waste reduction expected. For instance, the Laboratory has recently joined other sites in the practice of segregating sanitary waste to remove recyclable materials even though the practice is not cost effective in order to meet sanitary waste reduction goals. Many of the waste minimization goals were derived from Secretarial Directives in: Executive Order 12088, "Federal Compliance with Pollution Control Standards", Executive Order 12856, "Federal Compliance with Right to Know Laws and Pollution Prevention Requirements" and Executive Order 13101, "Greening the Government through Waste Prevention, Recycling, and Federal Acquisition". These orders are in keeping with the spirit of the Pollution Prevention Act (PPA) of 1990 and the Hazardous and Solid Waste Amendment (HSWA) of 1984 to RCRA, which established policy for minimizing waste generation and reducing reliance on waste disposal. (1)

NMT PHILOSOPHY

NMT is committed to maintaining operations in accordance with legal requirements, second only to the safety of workers and the public. Waste management and regulatory compliance cannot be accomplished without considering the processes generating waste. It is not something that can be magically applied by an external entity without impact or expenditure of effort. NMT realized that in order to attain an effective program, waste management must be integral to the Division in order to properly consider legal obligations from an operations standpoint, but remain independent in order to resist compromising the program due to programmatic pressures and deadlines. As prescriptive as the RCRA regulations are, they are still not entirely black and white, there are issues that must be interpreted. In many cases knowledge of both the regulation and the process allows modification of the process in the design phase which achieves regulatory compliance and waste minimization with minimal impact upon either the schedule or the budget and does not compromise the quality or integrity of research and development activities.

To maximize program efficiency and effectiveness, waste generators must be willing participants in proper management of waste and environmental compliance. Waste management must be involved from the start in planning projects in order to identify any activities that may require permits, modifications to permits or that may generate an undesirable waste form or unacceptable quantity of waste. The new activity approval process was modified to require a review by the waste management organization in order to avoid surprises late in the approval process when modification would be difficult and expensive.

It is very important to utilize acceptable knowledge in order to characterize waste with a minimum of sampling and analysis that is particularly expensive for radioactive waste forms. The vast majority of operations are contained within glovebox lines and stringently controlled so that no incidental substances may be introduced. Constituents are carefully identified and documented and processes, even experimental ones, are strictly controlled and documented making them ideal processes for applying acceptable knowledge.

Process personnel are the logical choice to provide characterization information on the waste with their intimate knowledge of the processes. Buy using standard forms, waste management procedures and consulting with waste management coordinators when required, they can quickly and efficiently document, package, mark and label the waste for collection by waste management personnel. Waste management personnel can then complete the documentation, collect and consolidate the waste into shipping packages, mark and label the packages per DOT, RCRA (when applicable) and radiological requirements and coordinate off-site shipment.

NMT-7 feels that this cooperation of generator and waste management has established an optimal waste management program in NMT operations.

ORGANIZATIONAL STRUCTURE

Los Alamos National Laboratory is organized into about three dozen major projects, offices and divisions based upon function under three associate directors and three deputy directors. Waste management and environmental compliance activities are divided between the Facilities and Waste Operations Division (FWO Division) with responsibility for Solid Waste Operations (FWO-SWO Group) and Radioactive Liquid Waste Operations (FWO-RLW Group). The Environmental Science and Waste Technology Division (E Division) is responsible for developing waste characterization and analysis standards in the Environmental Technology Group (E-ET Group). Environmental compliance groups reside in the Environment, Safety and Health Division (ESH Division) in the Hazardous and Solid Waste Group (ESH-19 Group), the Water Quality and Hydrology Group (ESH-18 Group) and the Air Quality Group (ESH-17 Group). Possible environmental impacts from proposed Laboratory operations or modifications of existing operations are evaluated in accordance with NEPA by the Ecology Group (ESH-20 Group). Supporting organizations include Quality Assurance in ESH-14 and the AA-1 Audits and Assessments Group. The NMT Division made the decision to form an independent group to handle waste management and environmental compliance issues in NMT-7.

The NMT-7 Group itself consists of approximately 70 personnel split between two sites and sharing some common resources. There are about 20 waste management technicians organized into 3 operational entities (TRU Solid, TRU Liquid and LLW & Hazardous) at one site and one operational entity at the other due to the different quantities and types of wastes generated there. There are three group managers, one group leader and two deputies (one with responsibility for each site), five administrative personnel with responsibility for document and records management as well as scheduling and reporting functions. The other personnel are team leaders, supervisors and specialists in the various aspects of waste management and environmental compliance, quality assurance and shipping. The group is clearly organized along functional lines with the waste operations at the two sites being distinct organizations.

The technicians posses skills that are unique to waste operations and they are equivalent in expertise to those in chemical processing, instrumentation, computers, electrical or mechanical operations. They must have a practical knowledge of the environmental regulations including certification in hazardous material packaging and transportation in addition to radiological worker training in order to safely perform their work. Their job responsibilities are clearly defined at each level and they may advance as their experience, knowledge and responsibilities develop.

PROGRAM DEVELOPMENT

In NMT Division, waste management functions were originally included in the Facilities Group in the 1980's. As requirements became more stringent with the enactment of environmental regulations and with agreements by the DOE to abide by those regulations (Federal Facilities Compliance Act), both the number of environmental personnel and the level of specialization grew to the point that it was recognized that the waste management function in itself could constitute a viable organization. The Laboratory worked to define new job families which up until that time had only been part-time assignments and came to define and classify environmental workers including waste management coordinators and waste management technicians.

The group interfaced closely with the Laboratory waste disposal organization and environmental groups and eventually recognized the need to place regulatory compliance and quality assurance staff on site to interface with operations personnel on a daily basis. This had the added advantage of providing a balanced picture of the requirements of the regulatory world with the needs of operations that required practical solutions to environmental regulations.

Waste operations at the plutonium facility are essentially mature, having been a separate entity and group since the late 1980's, whereas NMT established CMR waste operations only a year and a half ago. With the addition of a second nuclear facility (CMR Building) at a physically separate site, it became necessary to recruit a core of experienced personnel from TA-55 to join waste management personnel already at CMR Building that were familiar with the facility, process personnel and the operations producing waste. This temporarily weakened the organization, until budget issues could be resolved and vacancies filled. It is estimated to take from 6 to 9 months to train and certify new waste management personnel to an entry level.

Operations at the CMR Building became a matter of prioritization on three fronts; dealing with legacy issues, program organization to deal with current waste generation, and program building to meet future requirements. All of these issues had to be addressed and implemented as soon as practical with limited budget and personnel resources. A project management system was implemented to define, prioritize, assign responsibility and track the progress of activities.

PROGRAM EFFECTIVENESS

The measure of success of the waste management program is, ultimately, to produce a waste form with documentation acceptable to the treatment, storage or disposal site. The certification of the transuranic waste management program and the shipment of transuranic waste originating in NMT's Plutonium Facility to Carlsbad last year was a major accomplishment. Both sites have

routinely met the low-level waste criteria and sent waste to TA-54 for burial. Chemical and sanitary waste is routinely shipped off-site for treatment and disposal, and NMT supports a strong salvage and recycle program.

Radioactive waste shipments from TA-55 last year totaled: 278 55-gallon drums of solid transuranic waste, 23 55-gallon drums of solidified transuranic liquids, 2,880 two cubic foot laboratory trash boxes and 65 ninety cubic foot boxes of low-level non-compactable waste. Waste shipments from CMR last year totaled: 42 55-gallon drums of solid transuranic waste, 1,798 two cubic foot laboratory trash boxes and 52 ninety cubic foot boxes of low-level non-compactable waste.

The processes in CMR Building are fundamentally different from those in the plutonium facility in that the majority are analytical and typically handle much smaller quantities of radioactive material at a much lower concentrations. Therefore, the fraction of transuranic waste is much smaller than that produced at the plutonium facility. In the case of both transuranic and low-level non-compactable waste at CMR, the figure given represents a two to three year backlog of waste for the facility. Chemical disposal was of a much larger magnitude, representing decades of backlogged chemicals. A concerted effort by waste management over the past year and a half to do a comprehensive walk-down of all laboratory areas with the owners resulted in the disposal of approximately 12,000 to 13,000 items. This was a herculean task requiring close coordination with analytical personnel, nondestructive assay personnel, health physics personnel, facilities personnel, Laboratory waste management personnel, and the contractor who conducted the direct off-site shipment. In addition waste management supported a major campaign to reduce the building combustible loading to meet the facility safety basis, removing tons of records, packaging, boxes, furniture, shelving, books and periodicals from the building.

Another successful campaign involved the use of a HEPA filtered, negative pressure, confinement tent with an air lock to sort undocumented boxes of legacy low-level non-compactable waste. This was accomplished by waste management personnel in protective clothing and full-face respirators without either physical injury, although many of the items were awkward and heavy, and without spreading radiological contamination. Fifteen boxes were opened and the contents documented, and in some cases inappropriate waste items were removed from them for proper disposal. The work was accomplished as scheduled in about four weeks around routine waste management activities.

The program must be continually modified to support the needs of the facility with changing projects and processes internally, and from external regulatory changes. This requires effective two-way communications with sponsors, operators and regulators, awareness on the part of waste management personnel and involvement in the planning phase of activities. Waste management is tied in, intimately, with the Division Integrated Program Plan for long-range as well as short range planning and the estimation of future waste generation. Procedures must be reviewed on a regular basis and evaluated with respect to current regulations and needs.

This year also brought an increase in self-identified regulatory violations due to a significant increase in activities with hazardous and mixed waste, primarily associated with the acquisition of CMR Operations. The legacy campaign itself led to a proliferation of satellite accumulation areas (SAAs) containing hundreds of items, presenting increased opportunities for errors and discrepancies. The drain on resources from TA-55 operations also led to a temporary increase in self-identified regulatory violations at that site as well. Waste management is working with the generator to expedite removal of the remaining items and to close SAAs. In an attempt to minimize the number of active SAAs, a prompt pick up program is being initiated that will take hazardous or mixed waste items directly from processes to a central less-than-ninety day storage area (<90).

Generator training at the CMR Building also led, initially, to the identification of improperly characterized waste, which was reported and corrected immediately. This action started with the identification of processes where hazardous materials were used that resulted in the generation of waste that was also classified hazardous. Waste records then allowed personnel to track hazardous waste items to the drums in storage areas in which they were packaged. In some cases the hazardous waste items could be removed and consolidated, minimizing the number of hazardous waste drums. Operations personnel then worked with waste management personnel to properly characterize and segregate newly generated hazardous waste items from their processes.

One waste treatment study conducted in CMR, which spanned the CMR Resumption Project and CST to NMT transition, was in jeopardy of exceeding time constraints and had to be prematurely terminated. Many things contributed to the problems encountered in the study including: an insufficient understanding of regulatory requirements for waste treatment studies and a failure to fully consider all constraints at the inception of the project. Many issues must be factored into the cost of research with regulated materials, including: the effort necessary to properly characterize residues, costs incurred in setting up and maintaining permitted storage areas for hazardous waste, and regulatory requirements for the ultimate disposal of all wastes and residues resulting from the study. It also may not be easy to meet product specifications for recovered material or to even meet waste acceptance criteria! All of these possibilities must be considered. The facility new activity approval process has since been modified to require an NMT-7 review and concurrence.

FUTURE CHALLENGES

Significant gains have been made in the past five years in NMT waste operations by moving away from paper records to an electronic document system utilizing file servers, notebook computers and hand held scanners. The computerized Waste Management System, which was developed in the early 1990's, has significantly improved the efficiency of the data entry and filing process for transuranic waste. There are no longer transcription or calculation errors and the consistency of data has improved. Reports are readily available on transuranic waste and the status of waste data packages can be checked on line. Transmittal of information for review and approval of waste packages has also been expedited. The Waste Information and Tracking System (WITS) is being prepared for implementation and will improve the integrity of low-level and chemical waste management programs in NMT facilities.

Over that past year and a half, much progress has been made in establishing stable waste operations in the CMR Building and in addressing legacy issues. The next population of items requiring evaluation are equipment and instruments throughout the facility that are no longer in use, even though they may still be operational. During the forty-seven years of operation of the Chemistry and Metallurgy Research Building, a number of Divisions and Programs have come and gone from the Facility. These entities, for the most part, did not consider or budget for the disposal of obsolete equipment and instruments from their operations and were not held accountable by the facility manager for this responsibility. There exists today throughout the CMR Building a number of unused glovebox lines, fumehoods, equipment, instruments, parts, records, boxes and drums. These items pose possible safety hazards as well as potential regulatory liability to NMT Division. Whereas NMT Division took unconditional ownership of the CMR Building in March of 1998, these issues are now the responsibility of NMT to address and resolve.

The first order of business will be to survey, identify and document unused equipment, instruments, gloveboxes, fumehoods, boxes, drums, etc. in the CMR Building. A searchable database will be developed to capture all required information on these items. A barcode inventory system (compatible with current NMT-7 operations) will also be employed and items bar-coded to correspond with database entries. A field survey of all areas of CMR building will be made to identify items meeting the definition of legacy and to evaluate them with respect to radiological condition, industrial hazard/physical condition, regulatory concern, location, process knowledge, description, size, weight, etc. The survey team will work with CMR personnel in radiological protection, waste management, industrial hygiene and facilities operations to document the condition of legacy equipment. They will also work with operations personnel to gather process knowledge. In this manner, items can be prioritized and those that present the greatest risk can be stabilized and prepared for disposal as funding becomes available. Some items may not be removed from the building until it is decommissioned in 10 years.

Prior to 1998, waste disposal was funded in its entirety by the DOE Office of Environmental Management (EM). This situation, although practical, resulted in a disconnect between the organization funding projects that generate waste and the organization paying for waste disposal in most cases. Shrinking budgets were also forcing EM to spend a larger fraction of their funding allocation on the disposal of newly generated waste when their priority was decontamination and decommissioning, environmental restoration and site remediation. Switching the cost of newly generated waste disposal to the organization sponsoring the project effectively provided an incentive for waste minimization. The majority of programs in NMT Division are funded by the Department of Defense Programs (DP), and the Laboratory waste management organization and disposal facilities are funded by EM. This requires that waste from a process be traceable to the program that utilizes the process in order to recover disposal charges. This is a complicated problem that cannot be solved by instituting a rudimentary accounting system. Many different projects utilize the services of a single process and materials move between processes making the source of the waste difficult to track. In addition, waste types that do not have a disposal path (non-defense TRU, contaminated explosives or pyrophoric liquids, low-level biohazard, etc.) can be generated and could possibly incur infinite storage costs. In repose to this situation, NMT-7 must devise and institute a system to track waste disposal costs back to the projects generating them.

Regulatory requirements are constantly in flux. Changes in high level documents must be tracked though the requirements of the UC/DOE Contract and internal Laboratory requirements documents to the procedures that implement them, and the changes must be enacted in an expeditious manner. The most current regulatory change with a significant impact to NMT waste operations is the WIPP RCRA Part B Operating Permit issued by the NMED which requires substantial changes in transuranic waste characterization. NMT-7 is currently participating in a gap analysis of current program documents to determine what changes must be made to comply with the new requirements and what impact they will have on NMT waste operations.

SYNOPSIS

NMT Division believes that the responsible management of waste from actinide processing operations and analytical activities and protection of the environment is second only to worker and public safety. To this end, an integral waste management and environmental compliance organization was formed within the division to assure that these issues are addressed in a compliant, expedient and cost effective manner. Experienced waste management personnel and environmental specialists interface with operations personnel and Laboratory support organizations in waste management and regulatory compliance on a daily basis to assure that NMT activities remain in compliance with all state and federal statues, legal obligations, regulations, DOE orders, waste acceptance criteria, contractual requirements, Laboratory requirements documents and standard operating procedures. The NMT-7 Group is able to operate effectively in this prescriptive regulatory environment and has been able to achieve some major accomplishments including being the first to ship transuranic waste to WIPP and to effectively address serious waste management issues in the CMR Building. This paper lays the basis for understanding the significance of the activities presented in the following papers of this session to the NMT Waste Management and Environmental Compliance program.

REFERENCES

1 C. L. Foxx, "TA-55 Waste Minimization and Pollution Prevention Plan", LA-UR-95-1403, Los Alamos National Laboratory (1995).