

NNSA Pollution Prevention Awards

NNSA Best in Class

Slip Top Can Reduction Project

The existing stainless steel slip top cans used to store transuranic waste did not meet new standards. If these 11,000 containers had become useless, about 55 m³ of transuranic waste would have resulted. This team replaced just the container lids, resulting in significant cost savings and waste avoidance. Time was also saved because the materials in these containers did not require repackaging. The estimated cost avoidance for this project is \$3.5M.

Michael Gallegos Ronnie Chavez Louis Ferran Aaron Martinez
Kenneth Salazar Michael Trujillo Robert Vigil Sheryl Willis Dennis Wulff

Green Primaries – Environmentally Friendly Primary Explosives

Existing primary explosives for demolition, mining, construction, ammunition, and fireworks are lead or mercury-based. The Laboratory invented a new set of primary explosives that do not contain any toxic materials or create any hazardous waste. The new primaries are very effective, but they are much safer to manufacture and handle because they cannot be accidentally detonated.

My Hang Huynh Michael Hiskey Michael Coburn Ernie Hartline Gordon Jio
Dennis Montoya Jose Archuleta Edward Roemer Herbert Harry Lorelei Johnson

NNSA Environmental Stewardship Awards

Institutional Improvement Projects Developed from the Environmental Management System

The Laboratory used its Environmental Management System to develop environmental improvement projects. Two of the most beneficial projects to the Laboratory were the materials disposition project and the chemical life cycle project. These projects help the Laboratory minimize the accumulation and disposal of unneeded materials. For example, over 100 m³ of materials were salvaged or recycled during the cleanout at TA-59 instead of becoming trash. Cost savings: \$36,500.

Debbie Bryan Bryan Carlson Sonja Salzman Robyn Petersen Kirk Hollis Dennis
Hjeresen Jonathan Tapia Tim Sloan Joy McCullough Stephanie Anast
Feliz Vigil Ben Poff Peggy Reneau Marjorie Stockton Cathy Juarez
Janice Taylor Luce Salas Marc Gallegos Mike Shepherd Bret Chandler
Charles Davis Clare Bena Priscilla Davis Paul Hoover Rick Valerio
Luciana Vigil-Holterman Lance Kloefkorn Deba Daymon Connie Gerth
Dennis Martinez Kapil Goyal Pat Gallagher Kenny Ault

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Power Grid Infrastructure Upgrades Transmission Line

Log and rock berms were installed instead of silt fence for sediment control around disturbed areas for a new power transmission line. The logs and rocks came from the surrounding areas, and the use of 15 cubic meters of silt fence was avoided. 90 cubic yards of wood mulch from the county landfill was reused for temporary stabilization. Estimated savings from this project were \$72,000.

Tim Zimmerly Terrill Lemke Tom Lopez Shannon Smith Jake Lovato
Richard Dold Jeff Schroeder Liz English Annie Lovato

Removal & Asset Recovery of Copper-lined Faraday Cage

A Faraday Cage from TA-39-89 containing 1400 pounds of copper needed to be removed, and this removal was authorized as deactivation and decommissioning project rather than a remodeling project through the usual site support contractor. The value of recycling the copper offset the majority of the project cost, resulting in savings of over \$21,000.

Connie Gerth Darrik Stafford Bill Anderson Michael Dennis Neal Chesnut

Improvements to the Plutonium Electrowinning Process

The cathode used in the plutonium electrowinning process was redesigned to eliminate the potential of failure. Eliminating cathode failure dramatically reduces the need to reprocess material, decreasing the resulting waste by a factor of three. The new process saves about 15 days worth of labor and avoids the generation of 2700 Liters/year of liquid transuranic waste and 0.1 m³/year of solid transuranic waste. The estimated savings for this project were \$18,450.

Ed Joyce Kevin Martinez Walter Griego Danny Martinez
Vonda Dole David Felix Al Vargas

Low-Level Waste Minimization at DARHT

The Dual-Axis Radiographic Hydrotest facility implemented several innovations to reduce the volume of beryllium-contaminated low-level waste. The staff minimized the amount of material entering the test area, reused equipment such as blast mats, tarps, pallets, and plastic drums, and used collapsible water bladders instead of sandbags. These measures avoid an estimated 80 cubic meters of low-level waste annually and save over \$1.6M in waste disposal costs.

Shad Glidewell Ken Huff Gary McMath Paul Ortega Dennis Royer
Gary Salazar Jerry Seitz Richard Trujillo Larry Vaughn
Kelkenny Bileen Steven Dimarino

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LANL Best-in-Class Awards

Technical Area 55 Steam Generator Lay-up

In Technical Area (TA) 55, building 6 there are 2 steam generators that produce condensate in the Plutonium Facility (PF) 4 at a rate of 0.3 gallons per minute or approximately 597,240 liters per year when used 24 hours per day, 365 days per year. This volume of condensate accounts for approximately 38% of the Low-Level Waste (LLW) water volume discharged as industrial liquid waste from TA-55. The steam generators are operated whether there is a need for steam in the facility or not. An agreement was reached between the programs requiring the use of steam and Facility Engineering who operate and maintain the steam generators. They agreed to only operate them when needed and to conduct more frequent sampling of the water while in lay-up. This resulted in a savings of 511,920 liters per year of LLW with a cost savings of \$987,847 per year.

James Kevin Barbour Paula Jaramillo Ron Chavez

C-Division Installation of Perchlorate Acid Exhaust System

A new perchlorate acid exhaust system was installed at Technical Area (TA) 48 by Personnel in the Chemistry Division of Los Alamos. Fuming perchloric acid activities at TA-48 generate over 1,000,000 liters per year of radioactive liquid wastewater from the wash down of four large perchloric exhaust systems. Almost all of the use of perchloric acid was consolidated by the Chemistry Division into one laboratory at TA-48. The consolidation of perchlorate activities allowed the construction of a separate exhaust system for this laboratory eliminating the need to continue to wash down the four larger systems weekly. It is estimated that this new exhaust system will reduce the amount of radioactive liquid wastewater by at least 500,000 liters per year and will save the Laboratory approximately \$1,000,000 per year.

Carol Burns Wes Efurd George Martinez Jenna Casias
Pete Rice Bryan Carlson

Radioactive Liquid Waste Treatment Reverse Osmosis Concentrate Recycle

The low level radioactive liquid waste treatment facility conducted an experiment designed to reduce the amount of reverse osmosis concentrate (ROC) needing treatment by the evaporator. Instead of sending all of the ROC directly to the evaporator feed, it was recycled to an intermediate storage tank where the super-saturated solution would come to equilibrium prior to being recycled and blended with influent as feed to the first stage of the low level treatment system. A portion of the ROC was sent to the evaporator feed tanks in order to maintain the dissolved solid concentration at a level that would be treatable by the reverse osmosis membranes, and continue to meet discharge requirements. Prior to this recycling test approximately 12.5% of the ROC was waste; once recycling was instituted the amount of ROC that is wasted is reduced to 3%. The

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total cost savings, including outside contractors, labor, and utilities exceed \$1.3 million per year.

Bob McClenahan Jr.	Manny Fierro	Mary Beth Garcia	Ben Martinez
Tom Morrison	Matt Filer	Vangie Hodge	Wendy Staples
Wm. David Moss	Chris Del Signore		

Chemistry and Metallurgy Research Replacement Project Reuse/Recycle of Soil, Asphalt, Mulch from Vegetation

The Chemistry and Metallurgy Research Replacement (CMRR) Project made the decision to reuse and or recycle soil, asphalt, and mulch from vegetation instead of paying for the disposal of these products. The reused/recycled soil, approximately 207,000 cubic yards, will be used at various locations across the laboratory as well as the county landfill. The recycled asphalt, 486 cubic yards, will be used as a base course for construction vehicle traffic. Trees, brush, and bushes will be turned into mulch for dust suppression for the Storm Water Pollution Prevention Plan best management practice and other uses. The total savings for Los Alamos National Laboratory could be up to \$1,735,000.

Terrill Lemke	Tim Zimmerly	Austin Commercial
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LANL Environmental Stewardship Awards

FIRP-DISP Demolition and Removal of the R40 Complex: High Yield Recycling and Salvage Emphasis Resulted in Significant Waste Avoidance

Facilities and Infrastructure Recapitalization Program (FIRP) Disposition (FIRP-DISP) projects eliminate facilities and infrastructure that no longer are required to support mission requirements. This Project achieved pollution prevention by incorporating significant waste avoidance practices, but also, materials that were procured to finish the site were obtained from onsite Los Alamos Nation Laboratory (LANL) resources, enabling a reuse of those materials and ensuring waste avoidance by the LANL projects which provided the materials. Overall, the volumetric percentage of waste avoidance compared to actual waste disposition exceeded 77% (not including salvaged equipment or recyclable copper). For the project had an overall waste avoidance of 4,031 cubic yards of demolition products, salvaged 4,300 gross square feet of building space, and reused more than 3,000 cubic yards of available LANL materials. This project saved over \$351,000 in disposal costs.

Steve DiMarino	LeRoy Hasenack	Terry Kiehne	Darrik Stafford
Duane Verley	Pete Stilwell	Liz English	Kimberlee Knapp

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Ultrapur Carbon and Carbon-Nitride Nano-Materials

A greener feed stock was developed for use in nanotechnology to replace hydrocarbon precursors. By using green chemistry principles a solvent-less pyrolytic conditions, in which melting points, heating patterns, and decomposition temperatures are simultaneously manipulated, to prepare ultrapure carbon nano-particles and diamond-hard carbon-nitride nano-architectures from novel high-nitrogen compounds. The manufacture of these carbon-based nano-materials from the high nitrogen compounds will abolish specialized facility and equipment, eliminate personal exposure to high-temperature and applied-pressure reaction conditions, eradicate lengthy preparation and complicated purification, and drastically reduce production-costs associated with liability insurance and removal of toxic fumes and hazardous waste.

My Hang V. Huynh Michael A. Hiskey Michael D. Coburn Ernie Hartline
Dennis Montoya Jose Archuleta Edward Roemer Anna Giambra
Darren Naud

Green Primaries – Environmentally Friendly Explosives

Green Chemistry principles were used to create a toolkit of 5-nitrotetrazolato-N²-metalate green primaries that have diverse initiating sensitivities and explosive performance for use in many national security and commercial applications. These green primaries combine superior explosive performance with greatly improved health and safety conditions during synthesis, manufacturing, and use. They are also the only known primary explosives that fulfill all six Department of Defense criteria. They give quantitative yield without purification or re-crystallization, so they can be manufactured quickly and with lower waste disposal expenses. Green primaries are a substantial improvement over currently used lead-based primary explosives because they are non-toxic, inherently safer with regard to accident potential, decompose into completely non-toxic components, and do not cause lead or any other toxic heavy metal to become airborne.

My Hang V. Huynh Michael A. Hiskey Michael D. Coburn Ernie Hartline
Dennis Montoya Jose Archuleta Edward Roemer Herbert Harry
Lorelei Johnson Gordon Jio

Waste Volume Reduction and Process Improvements at Los Alamos Neutron Science Center Technical Area 53

Weaknesses in the experiment review process at Los Alamos Neutron Science Center (LANSCE) Technical Area (TA) 53 were identified that caused experiments and their associate waste streams to be reviewed individually, resulting in up to 300 waste streams that were managed as hazardous waste. The experiment review process was changed to require collection of necessary information on materials (specifically chemical usage) and work processes in order to identify potential waste streams. The review process was able to provide waste management coordinators with the necessary process knowledge and documentation to properly segregate and manage waste streams. Areas of improvement related to management of low-level waste streams were also identified. The opening and

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evaluating the contents of approximately 100 low-level waste containers meant using segregation techniques, primarily sampling and surveying, which resulted in a 50% reduction in low-level waste volume for the site. The results of looking at these processes are increased worker awareness of environmental aspects and impacts, thereby sustaining improvements in compliance and worker health and safety. Workers take pride in their environmental compliance performance, which to date includes Resource Conservation and Recovery Act audits with no findings or observations with a savings of approximately \$1,206,106 for the Laboratory.

Ronnie Garcia Lance Kloefkorn Adrian Romero Leilani Conradson
Mary Jo Waltman Frances Aull

Advanced Testing Line for Actinide Separations: Nitric Acid Reuse

With the closure of the acid discharge line from Technical Area (TA) 55 to TA-50, continuation of nitrate operations in Plutonium Facility (PF) 4 was entirely dependent on the coordination with the cementation team in maintaining a nitric acid material balance with no pathway for the discharge of liquid waste streams. For the first time in the history of TA-55 PF-4, nitrate operations were routinely and successfully performed using recycled nitric acid. During a normal operating year this new process will result in a water savings of approximately 13,200 liters per year and a cost savings of approximately \$386,500 per year.

Devin Gray Judy Roybal Jose Valdez Yvonne Martinez
Cathy Martinez Jason Brock Dan Kathios Ronnie Chavez
Aquilino Valdez Kenny Hansel

Reduction in Number of Cemented Transuranic Waste Drums by Process Optimization

With the closure of the acid discharge line from Technical Area (TA) 55 to TA-50 the evaporator distillate, which was normally discharged to TA-50 had to be cemented. This was necessary to prevent the distillate from taking up storage tank space needed for upstream programmatic activities. If the distillate solution wasn't removed via cementation, upstream activities would be forced to stop within weeks due to lack of downstream storage space. Cementing this waste would increase the waste volume requiring cementation and would increase the number of cement drums being generated and sent for pre-Waste Isolation Pilot Plant (WIPP) handling and storage. A study was conducted to determine how much the water volume could be reduced and replaced with pH-adjusted waste without sacrificing the integrity of the final cemented waste form. It was determined that all the water could be safely withheld and replaced with waste and this resulted in a saving of \$264,000 and 2,500 liters of water.

Gerald Veasey Georgette Ayers Edward Romero Tim Lopez

Sanitization of Classified Parts by Melting

Excess classified parts must be sanitized by a SAFE-S7 approved plan to remove the classified aspects prior to discard. Parts which cannot be sanitized by an approved plan are managed in special storage at Technical Area (TA) 54 or held by the owners in secure

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storage. Thermal destruction by open detonation at a detonation firing site historically been used to sanitize part containing depleted uranium. This practice is effective in removing classified aspects, but the detonation disperses depleted uranium particles over the firing site which increases the volume of contaminated firing site debris. Classified shapes which meet the acceptance requirements for melting in the Material Science and Technology furnace at TA-3 were identified. Depleted uranium recovered from the melting process is cast into ingots which may be reused on-site to machine new parts, off-site in military application, stored on-site for future use, or disposed as highly compact low level waste.

Isaac Herrera Gary Laabs Ann Sherrard Kelkenny Bileen
Steve DiMarino Connie Gerth Deniece Korzekwa Lydia Apodaca
Fermin Garcia

The Spallation Neutron Source Bubble Test Loop – Achieving Great Science While Maximizing Pollution Prevention

The Spallation Neutron Source Bubble Test Loop experiment conducted and Los Alamos Neutron Science Center was carried out with a significant reduction in hazardous and mixed low level waste (MLLW) generated and earned high customer satisfaction. A multidisciplinary team provided continuous coverage throughout the duration of the experiment that ensured personnel safety and waste minimization using proven mercury and radiological survey techniques, reuse/recycle, and proper waste segregation. Through the efforts of the team, the experiment achieved a 60% reduction in hazardous and MLLW. In addition, through the reuse of the Mercury Bubble Test Loop from a previous experiment, the facility saved an estimated \$64,781 in MLLW disposal costs.

George Evans Ronnie A Garcia William Knight Joseph Price
Adrian T. Romero

Mixed Waste Milkruns with Other DOE Sites Cut Costs and Fuel Use

Costs for transporting mixed (hazardous and radioactive) wastes across the country have reached an all-time high are still rising as fuel costs go up. Los Alamos National Laboratory makes about a dozen shipments per year of mixed waste to various treatment facilities. When the opportunity arises LANL combines shipments with other DOE sites shipping similar wastes. A milkrun was coordinated with a DOE facility in Texas for an immediate cost savings of approximately \$5,500.

Chris Duy James Nunz Lisa Jones

Minimization 55-Gallon Steel Drums

A machine shop located at the laboratory receives machine coolants and lubricants in 55-gallon steel drums. After the drums are emptied they are stored outside and once a year they are picked up by a contractor for off site recycling. A drum crushing process was implemented to minimize the volume of the drums and the crushed drums are being picked up several times a year for recycling. Implementation of this process reduced the volume of recycled metal drums and eliminated the need to store the drums outside since they are now placed into the existing metal chip bins. This process improved the

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housekeeping of the area, eliminated the need for storage space, and saved the laboratory \$3,000 per year.

Douglas Knutt Fernando Algarra

Removal of Copper Faraday Cage

A request was made to the site support contractor to remove an old unused Faraday cage to better utilize building square footage. The site support contractor was unable to subtract the recovery cost of the copper from the labor costs due to administration restrictions and their estimated start time was in four to six months with four days on-site performing the work. A small business contractor was acquired who would perform demolition and removal of the Faraday Cage and associated wall shelving, recycling of copper sheeting, and stockpiling of wood for the laboratory to recycle or reuse. The small business contractor was able to begin the project six days after the contract was awarded and completed the work with one day on-site. The laboratory was able to save \$21,611 by acquiring a small business contractor instead of using the site support contractor.

Connie Gerth Steve DiMarino Michael Dennis William Anderson
Darrik Stafford Neal Chesnut

A Demonstration Laboratory for Reduction of Mixed Low-Level Waste

One relatively large, ongoing component of the mixed low-level waste (MLLW) stream at Los Alamos National Laboratory (LANL) is electronics. As computers or other electronics get replaced, the old electronics become MLLW by default due to the presence of regulated metals in the electronics and the potential for the presence of radioactivity. It is time consuming and expensive to remove only those components that contain the regulated metals or decontaminate them and disposing of MLLW is very expensive. A cost effective alternative to disassembly and/or decontamination is to minimize the volume of electronics in radiological control areas from the beginning without sacrificing capabilities. An internal network from within the laboratory must be established so that one desktop computer could act as a server and network with the printer and laptop computers that are used to operate analytical equipment. Once the network is functional, all of the analytical instruments in the laboratory could use the same printer. Overall four printers, five desktop computers, five monitors, five keyboards, and five computer mice were removed and replaced with three laptop computers, one desktop computer, and one printer in the analytical laboratory without any reduction in capability. Overall LANL will decrease costs and increase productivity through a lower volume of generated MLLW with the implementation of this procedure.

Peter Stark Blossom Cordova Bryan Carlson Gina Cata
Orlando Vieira

SEC Division Clean Out of Basement of Technical Area 52 Building 1

A clean out of the basement of Technical Area (TA) 52, building 1 basement resulted in significant savings for the laboratory and underscores the need to initiate more space walk downs across the Laboratory as soon as possible. The discovery of abandoned lease

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office equipment was significant in that leased items are being sent for disposal or salvage. If these items are not recovered the laboratory is required to pay the balance of the lease and potentially the cost of replacement. The identification and mitigation of several industrial hygiene and environmental hazards, including an improperly stored high efficiency particulate air filter from Rocky Flats, with potential radioactive and beryllium contamination, was discovered. Approximately \$17,547 of assets were reused or recycled due to the clean out.

Matt Pierce Luce Salas Stephen Bonner Larry Pacheco
Gerald Tafoya Rae Arguello Ronald C. Scripsick Jeremy Chacon

EES Division Clean Out of Temporary Structures in Technical Area 51

Several temporary structures requiring clean out and removal were identified in Technical Area (TA) 51. There were a total of 35 structures consisting of transportainers, semi-trailers, and storage sheds that were evaluated for possible disposition as part of the Footprint Reduction Program some of the structures were fragile to the point of crumbling. Lead-based paints were used in many of the transportainers and the paint was removed in order for the transportainers to be reused or excessed. Eight units were cleaned out and are being reused, eight additional structures are slated for clean out and reuse next year, two units were excessed, and Raman Lidar equipment was transferred to the University of Iowa.

John Archuleta Mike Ebinger Cliff Meyer Johnny Salazar

Closed Loop Chiller for Denton Vacuum

Cooling water for a Denton Vacuum located in Technical Area (TA) 40 was previously discharged to the building wastewater line that discharged to a septic system. A closed loop chill was installed on the Denton Vacuum and the potable water supply line and the discharge line to the vacuum were eliminated. The closed loop chiller was surplus equipment from another project at the facility. Installation of the closed loop chiller saved 39,000 gallons of water per year, pumping the septic tank 52 times per year.

Frank Abeyta Sam Garcia

WFO-FOD Removal of Legacy Surplus Equipment and Material

Two surplus military tanks and an Ector radiograph machine were removed from the Laboratory for recycling. The weight of the two surplus military tanks was estimated at 151,600 pounds and the Ector radiograph machine was estimated at 674,000 pounds. Prior to recycling the Ector radiograph machine, approximately 100 gallons of oil was removed for recycling. There also was 210 cubic yards of scrap metal that was transported off-site for recycling. The scrap metal and excess material posed a safety and environmental liability. Removal of the scrap metal and excess material also facilitated vegetation removal around the firing sites lowering the potential for fires.

Kelkenny Bileen Steve DiMarino Jake Olivas Reece Wilson
Willie E. Haynes

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WFO Removal of Surplus Chemicals

Approximately 1,800 unused unspent chemicals were removed from Technical Area 9. The removal of the chemicals eliminated the potential environmental liability associated with improper management of the chemicals.

Gordon Jio Kelkenny Bileen

WFO-FOD Close Out of Non-Operational High-Explosive Wastewater Sumps

Five non-operational High-Explosive (HE) wastewater sumps were closed out that due to their configuration, collected storm water run-on which annually cost tens of thousands of dollars in analytical, pumping, and waste treatment costs. The sumps were no longer required for programmatic work and the rapid filling of the sumps during the monsoon season increased the potential for overflow, thereby increasing the division's environmental liability. Two of the sumps were removed, the other three sumps were emptied, and the inlet and outlet ports were sealed, the sumps were then filled with gravel and sealed with a concrete cap. Close out of these non-operational HE wastewater sumps was identified as an Action Item in the division's Environmental Action Plan for the Environmental Management System. This project saved the Laboratory approximately \$32,000 per year.

Randy Johnson Connie Gerth James Malcolm Ken Oshel
Kevin Krause Eugene Fresquez

C Division and EMD Team Clean Out of Technical Area 59 Building 1 Basement

The cages and adjacent hallways of Technical Area (TA) 59, building 1 basement were storage locations for multiple active and defunct groups. The items stored within the cages and hallways represented a microcosm of the storage and legacy issues that the laboratory will face during future clean outs. The results of the clean out was as follows: recovery and disposal of over 240 cubic meters of uncontrolled mixed low-level waste; recycled four roll-off containers of clean metal and one roll-off container of cardboard; salvage of two truck loads of re-usable items and equipment; and recovery and disposition of several sensitive or hazardous items.

Myrna Romero Kenny Ault Robyn Petersen Vicentita Rivera
Anthony Baca Bryan Carlson Jacque McClory Michael Trujillo

Mitigation of Expired "Time Sensitive" Chemicals in a Glovebox

Efforts to disposition 200 plus bottles/vials of materials/chemicals that have been used for various applications over the past six to ten years has been an ongoing effort. A major issue that had to be addressed was several containers of chemicals that were possible peroxide formers. There was a risk at even opening the bottles due to the shock sensitive nature of the peroxides and therefore cannot be tested for peroxides. Since these containers were in a glovebox normal methods for dealing with these types of hazards could not be utilized because just in the act of packaging the containers for the move there is a small but unacceptable likelihood that one of all containers could detonate in the glovebox. A working solution was found to mitigate the shock sensitive hazard and

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destroy the peroxides if any were found. Not only did this procedure minimize waste it presented a path forward for waste that did not have a disposal path.

Doris K. Ford Leonardo Trujillo Michael Cournoyer

Technical Area 55 Reuse Project

A successful effort was made to reuse materials from Technical Area (TA) 55 at other Los Alamos National Laboratory (LANL) sites. TA-55 had thirteen bins and nine lockable cages that were no longer necessary and were taking up valuable storage space. The items were assayed by Radiological Control Technicians and were free released. The bins and cages were put to use at two other technical areas which kept 20.25 cubic meters of industrial waste from being disposed of. This reuse effort saved the laboratory approximately \$8,700 and made 20.25 cubic meters of storage space available at TA-55.

Errol Cohn Fil Domingues Ronnie Garcia Connie Gerth
Joseph Gonzales Leroy Martinez Tommy Martinez Egan McCormick
Sonja Salzman Missy Trujillo

HR Division Educational Pollution Prevention Efforts

Educational Pollution Prevention successes include several innovative learning approaches to Environmental Management Systems (EMS) such as an EMS Crossword Puzzle that was subsequently posted on the Laboratory's EMS website, published in the Los Alamos National Laboratory Newsletter, and requested for use by other organizations. A Division EMS website was established with links to laboratory and Division specific information, documents, and tools. Employees were also provided with unique communications such as EMS'mores, which were a series of EMS "emailgrams" that helped employees learn about EMS, understand what their role is and how they can make a difference, as well as providing them with creative tools/suggestions in preparing for the EMS audit.

Bonnie Townsend Tessa Quintana Jennifer Lopez Michael Beauchamp

Recycling Lead Acid Batteries

A recycling contract was secured with a recycling company to recycle 120 lead acid batteries. The recycling company shipped the lead acid batteries to another company in California saving the laboratory \$8,500 in disposal costs as well as contributing a substantial effort to the laboratory's waste minimization effort. This California company recycles scrapped, lead acid batteries and other lead scrap which is the primary raw material, and processed them into pure lead and lead alloys that are then sold to battery manufacturers and lead users in other industries. This company also recycles the plastic used in battery casings which are processed and cleaned for sale to plastic fabricators.

Michael Gordon

"Green is Clean" for Low-Level Waste for Technical Area 35 Buildings 2 and 27

An evaluation was conducted of low-level waste in Technical Area 35 buildings 2 and 27 and determined the material met the "Green is Clean" criteria. All of the low-level waste generated from the operation was approved to be processed as "Green is Clean". In

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addition all cardboard shipping containers from the operation have been approved to be handled as “Green is Clean”

Alice Trujillo

Reuse of Electronic Components from Phermex Power Supplies

As the Phermex project was decommissioned excess electrical components from the radio frequency (RF) system and associated power supplies were identified and inventoried some of the components were only eight years old. Many of the large oil-filled high voltage capacitors were essentially new items, with low accumulated operational hours. A number of items were moved to Los Alamos Neutron Science Center, with the idea that they might be usable again. A prototype RF system has been under development but funding had been available to cover labor without adequate materials and structures. The new capacitor bank of the prototype was designed around the reuse of recycled capacitors along with high power resistors, high voltage relays and current transformers and all of this equipment was removed from the decommissioned Phermex facility. This was a savings to the project of approximately \$276,000.

John T.M. Lyles	Jerry L. Davis	Phil Torrez	Steve Archuletta
Luis Lopez	Alex Velasquez	Danny Vigil	Jake Olivas

Clean Outs and Chemical Disposition – Materials and Chemistry FOD and C, MST and WS Divisions

An excess chemical removal project was initiated on behalf of a tenant organization. This initiative culminated in the removal and disposal of over 5,000 excess chemicals from facilities in Technical Areas 3, 46, 48, and 59. This project not only reduced the regulatory liability associated with excess chemicals, but also improved the overall safety basis for each of the facilities. Over 2,500 chemicals were consolidated at one location in an effort to reduce disposal costs and enable others on site to retrieve any excess chemicals for use elsewhere. To enhance removal and disposal, chemicals were consolidated at a single site whenever possible and were removed by a direct site pickup by waste management to minimize disposal cost.

Steve Obrey	Rhonda McInroy	Karen Dewees-Lee	Darryl Garcia
Philip John Martinez	John Chamberlin	Robyn Petersen	Ron De Sotel
Steve Shelton	(James) Pat O’Grady		

C-Division Major Clean Outs (TA-48 and TA-46)

Material and equipment stored in an outside storage area and three railroad box cars of storage were eliminated. The materials and equipment consisted of miscellaneous laboratory equipment and construction materials. Approximately 12,000 cubic meters of materials from the containers were disposed or recycled and three box cars were sent to a metals recycling company and recycled. This clean out saved the Laboratory approximately \$300,000.

Dave Selle	Karen Dewees	John Chamberlin	Ron De Sotel
Robyn Petersen	Darryl Garcia	Philip John Martinez	

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Notice of Intent Decision Tree for the Management of Drilling, Development, Rehabilitation, and Sampling Purge Water

The Laboratory has ongoing programs to drill, develop, rehabilitate, and purge alluvial, intermediate, and regional aquifer ground water wells to meet Order on Consent requirements. With the approval of New Mexico Environment Department (NMED) the Laboratory managed and disposed of ground water produced during these activities by land application. The NMED informed the Laboratory that this practice was not sufficiently protective of ground water and that modification of the existing decision tree was necessary. The sampling purge water at all of the wells must be stored and managed with an estimated volume at nearly 100,000 gallons per year. A new Notice of Intent Decision Tree was developed with the corporation of NMED that establishes a decision matrix to determine if the purged sampling water is of sufficient quality to land apply and water that is not suitable for land application will be disposed at one of the Laboratory's wastewater treatment facilities.

Bob Beers Kelly VanDerpoel

TA 55 Hazardous Waste Crew

During a waste characterization task it was determined that every piece of waste removed from a system in Technical Area 55 could be recycled. Items from this project included large halon holding tanks, piping (electrical and halon), electrical wiring, halon sensors, and halon detectors. The project estimated a savings of \$2,000 of Hazardous Defense Waste.

Egan McCormick Charlene Montague Randy Martinez

Green Bullet Use at Firing Range

The staff at the Laboratory firing range use green bullets for about 40% of their training exercises with all of their weapons systems. Green bullets have copper composite cores instead of traditional lead cores, so a significant amount of lead is kept out of the environment by using green bullets.

Stephen L. Rivera Lawrence Barrone Kenneth Daniel Stan Hayes
Vicente Trujillo Robert Bustos Raymond Medina David Small
Jerry Archuleta Shane Norman

Used Oil Recycle

A used oil recycling program was setup and initiated with an independent contractor to recycle used oils from the Laboratory. This initiative has recycled over 5,000 gallons of oil and avoided \$147,700 in disposal costs.

Ken Oshel Kevin Krause Audrey Garcia

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Alternative Users for Halon

KSL staff identified the Department of Defense as a reuse source for 31,827 pounds of Halon and saved the Laboratory \$119,351 in disposal costs associated with this material. The estimated replacement cost to the DoD would be over \$1,000,000 for this material.

Ron Riggins

Alternative Use for Paint Supplies

Alternate users were found for good, usable paints, coating, caulk, fillers, putties, and Ramsets (charged fasteners) that were no longer used at the Laboratory. The users include Habitat for Humanity, Northern New Mexico Community College, and the City of Espanola. A total of 430 gallons was donated along with 1,000 Ramsets which resulted in a saving of \$22,125 in disposal costs for the Laboratory.

Selene Moseley

Jillian Burgin

Charles Davis

Mark Madrid

Gabe Romero

Bulk Purchasing of Supplies

An initiative was taken to purchase oils, fluids, and other items used by the Motor Pool in bulk previously, these items were purchased in incremental containers. Bulk purchases have reduced the overall operation cost of these materials by 10% in addition this action reduced the size of storage areas and the number of items in ChemLog.

Don Bednar

Placite Paint Replacement

Substitutes were researched, tested, and identified as safe replacements for hazardous placite epoxy paints and associated strippers (Methyl Ethyl Ketone). Upon implementation the use of water based epoxy paints and mechanical strippers will save approximately \$45,000 per year in labor cost, waste disposal, and industrial hygiene requirements. Workers will no longer be exposed to hazardous solvents associated with the placite paint and the organic/mixed waste stream associated with the use of the placite paint will be greatly reduced.

Mark Madrid

Charles Davis

Sigma Clean Up Effort

This team identified surplus material at Sigma, segregated items for recycling, salvage, or disposal, and then cleaned the site up. There were 22 truckloads of items ranging from dishwashers, furniture, and cranes that were transported to salvage for reuse. Recycling paths were identified for dozens of other items including lathes, safes, furnaces, and milling machines.

Darryl Garcia

Philip Martinez

Patrick Sullivan

Barry Bingham

Benjamin Ewing

Paul Martinez

Donald Nye

Stephen Quintana

Tim Tucker

Victor Vargas