

NMSU Environmental Health & Safety Annual Report - 2016

NM STATE UNIVERSITY

ENVIRONMENTAL HEALTH & SAFETY

ANNUAL REPORT 2016

INTRODUCTION

MISSION

Environmental, Health and Safety supports the NMSU mission by promoting a safe, healthful environment in a proactive and cost effective manner that helps the University community minimize their risk.

EH&S is committed to facilitating University safety, health and environmental protection by providing and coordinating programs and services that support teaching, learning and research activities. Through these EH&S programs and our partnerships with various constituents of the campus and regulatory agencies, we prevent personal injury, recognize and control hazards, minimize risk and loss, and provide leadership in environmental stewardship.

EH&S fulfills its mission by implementing programs and services in nine major areas.

VISION

NMSU will be a recognized leader by customers, regulators, and our peers in establishing an effective safety culture which holds employees at all levels accountable for environment, health, and safety performance.

Our goals are to have a workplace free of injuries and hazardous exposures, to prevent or minimize any adverse impact to the environment, to provide services of the highest quality to the NMSU system and to be recognized as leaders in the areas of environmental protection, health and safety. Responsibility for health, safety and environmental protection will be an integral requirement of all employees and students of New Mexico State University.

DEPARTMENT VALUES

Our department will be comprised of individuals committed to our mission, *achieving* our vision and the highest professional practices and standards. We provide *quality services* to our customers by understanding their individual needs and measuring our effectiveness. We carry out our responsibilities with knowledgeable professionalism. We provide *innovative*, reasonable and timely solutions. We empower and require accountability of our team in a supportive work environment where we can achieve our full potential.

The EH&S Team will practice their profession by following recognized scientific principles and management practices, factually *communicating* to affected parties their findings in an *honest*, straightforward manner, exhibit the highest level of *integrity, honesty and empathy*, while never compromising the public's welfare. Our team will strive for continual education and professional development, to provide superior customer service in all areas, to perform service only in the areas of competence, and maintain information as confidential when appropriate.

DREW KACZMAREK, JOSE L GAMON, DAVID SCHOEP, KATRINA DOOLITTLE, SUE TEREBENETZ, DERRIK WOOTTON, GINGER PARKER, JACK KIRBY, ROSE MELENDREZ

DAVID SHEARER, POLLY WAGNER, RYAN PERAITA, MICHAEL LUCERO, LUIS MORALES, STEVE MOATES, PATTI SAENZ

OVERVIEW OF 2016

- EH&S built an entire new safety.nmsu.edu webpage with updated and new information available to all NMSU stakeholders.
- EH&S scores 86% in customer satisfaction as Friendly and Helpful.
- EH&S facilitated 5 external regulatory compliance inspections with no penalties.
- EH&S completed 88 regulatory compliance reports to external agencies.
- Research support continued with expanded services such as detailed protocol reviews and focus on laboratory decommissioning.
- Safety training was provided face to face to 3873 persons in 240 safety classes.
- EH&S now offers online: Employee Safety, Radiation Safety Refresher, Bloodborne Pathogen Refresher, Dry Ice Shipper Training and SPCC Awareness. (Coming soon – Laboratory Standard)
- In combined departmental efforts, NMSU achieved 97% compliance in delivering General Employee Safety Training online (8098 employees).
- Employee injury and illnesses continued a trend of less injury and illness cases over the recent six year period compared to previous years with a 56% decrease from 2006.
- 90% of supervisors completed the Supervisor Accident Investigation Report with the assistance of EH&S.
- Loss control program includes facility safety inspections in total of 5849 rooms, 405 of which were laboratories. This includes main campus, remote campuses and Ag Science Centers.
- NMSU was audited on April 26, 2017 by the State of NM Risk Management Division (RMD) and received a score of 98%.
- EH&S completed certification inspections on 200 fume hoods using a student inspector. All inspections are now tracked in AIM.
- There were 153 responses to incidents primarily involving indoor air quality complaints and minor hazardous materials spills/incidents.
- Issued validation for 1151 driver's permits, of which 271 were for utility cart use.
- EH&S promoted safe bicycling by hosting several bike safety events promoting safe riding as well as installing bike lanes, share-the-road signs, sharrow road symbols, and new parking racks.
- EH&S oversaw 34 abatement projects that generated 1621 cubic yards of waste, 19 of which required NESHAP filing with NMED.
- New Title V and NSR Air Permits received by NMED.
- Remote generator monitoring was installed for the Police Department for more efficient tracking of generator run times.
- Closure activities have begun for the NMSU Landfill including the installation of 2 new monitoring wells at the direction of NM Solid Waste Bureau.
- The City of Las Cruces performed a formal inspection for wastewater operations. No deficiencies were noted.
- EH&S assumed primary responsibility of Hazardous Materials Shipping for NMSU. Shipped 19 hazmat shipments in 2016.
- Picked up, processed, and shipped 45,727 pounds of waste in 2016. The team managed 3,117 waste items.
- The cost per pound of waste was 4% less than the previous year.
- EH&S picked up and identified 39 unknown chemicals. Chargebacks resulted in $1,950.
- Innovation and expertise by the Haz-Waste Team led to savings of $10,000 in disposal.
- Renewal of the Radioactive Material License at CEMRC by the NMRCB.
- 2 unannounced radiation regulatory inspections, 1 at Main Campus and 1 at CEMRC by NMRCB. No deficiencies noted.
- 320 pounds of radioactive waste was disposed of using decay-in-storage resulting in lower cost of disposal.
- Continued support of Biosafety Program through committee application reviews, monthly training support and disposal of biohazardous wastes.

FACILITIES AND SERVICES CUSTOMER SATISFACTION SURVEY

Environmental Health & Safety was reorganized to Facilities and Services (FS) in July 2010 and has participated in FS's customer satisfaction survey each year with high rates of satisfaction among respondents. According to the 2016 survey results report, "EH&S staff are friendly and helpful when I contact them for services" had the highest percent of combined satisfaction at 86%. This was closely followed by 84% of satisfaction with the overall staff knowledge in their areas of specialty **(Figure 1).**

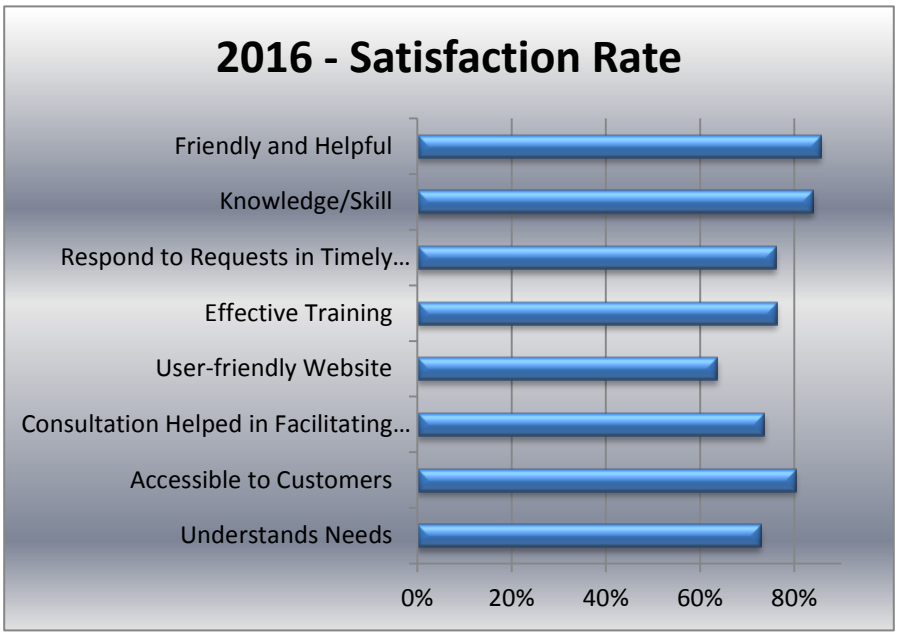


Figure 1: Combination of Very Satisfied & Satisfied

In 2016 there were approximately 133 respondents that scored EH&S on 8 different categories shown in **Figure 2**.

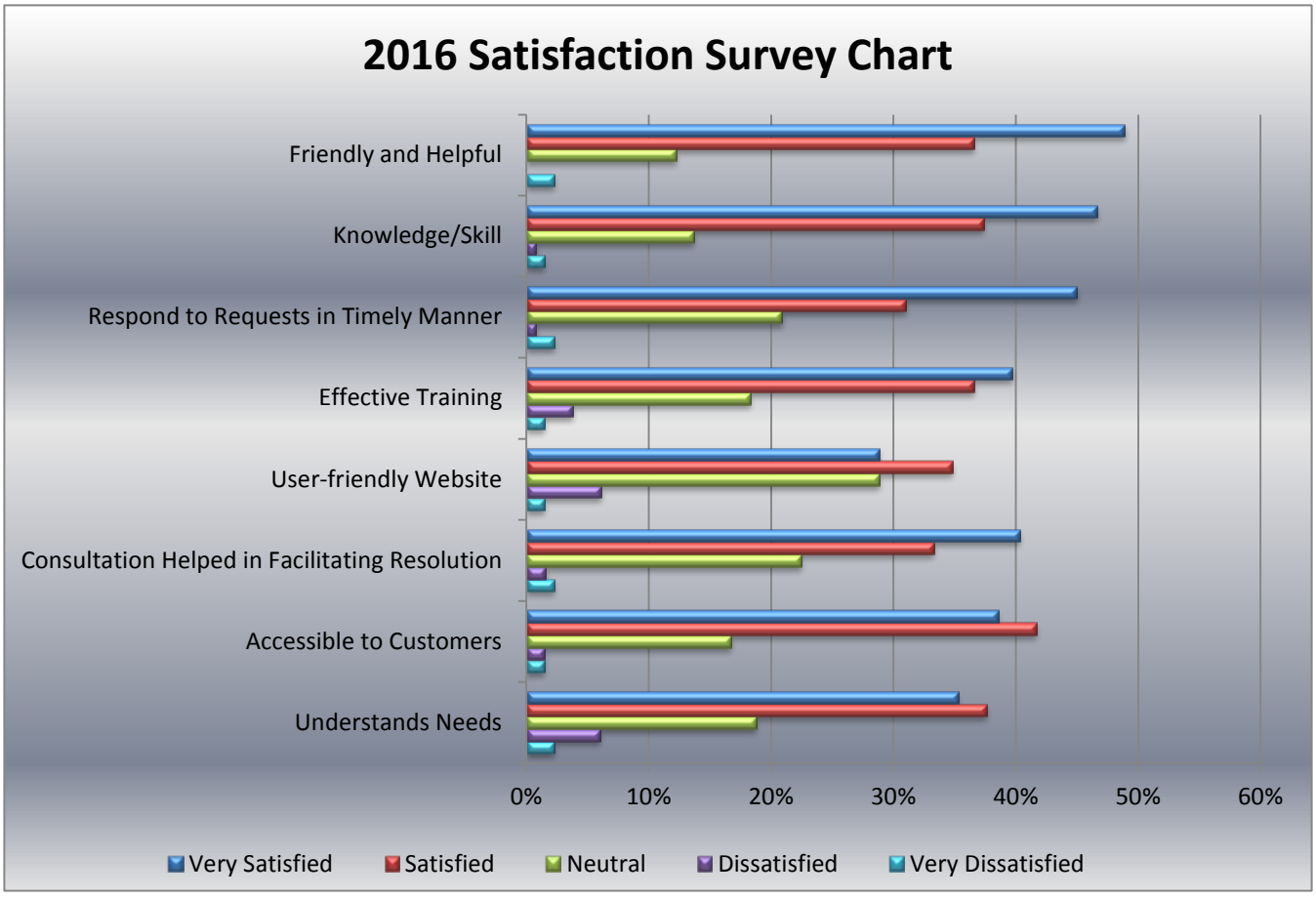
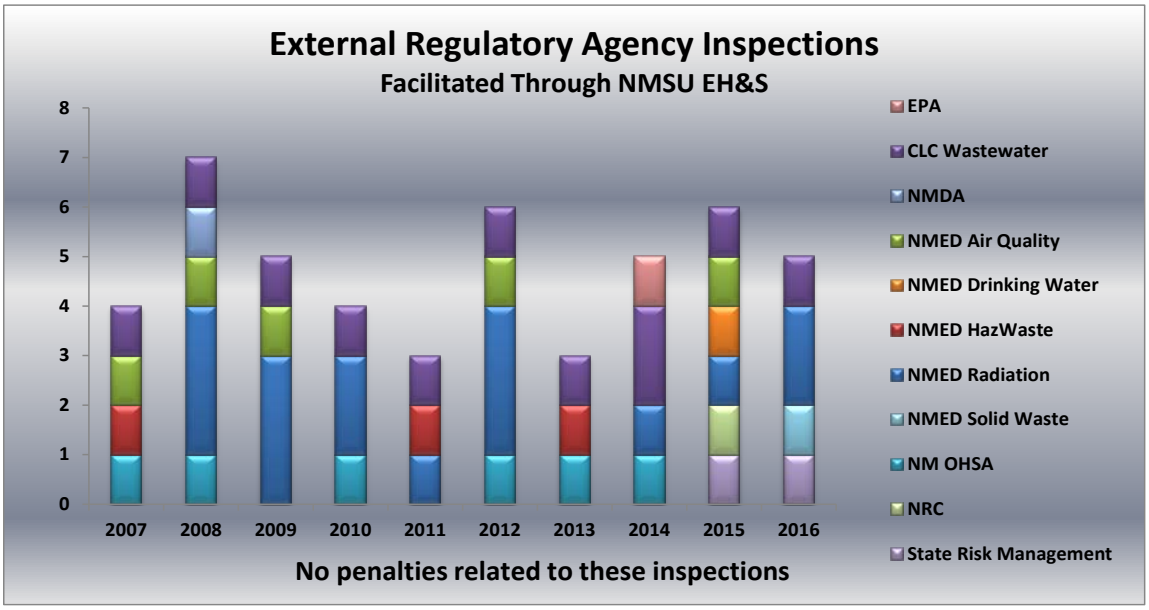


Figure 2: Complete Survey Results for EH&S

COMPLIANCE INITIATIVES & SUPPORT

The realm of regulatory compliance and span of responsibility for EH&S is ongoing and forever changing with increased regulations or new regulation. Each area of responsibility is described in detail of each section of this report. These areas are highly visible and frequently audited. Every year, EH&S facilitates several regulatory compliance inspections from various State of New Mexico and City of Las Cruces agencies **(Figure 3)**. Inspections by these agencies may issue minor notices of violation, however, quick and effective resolutions have resulted in no penalties since 1993 for all EH&S operated programs.

Figure 3: External Inspections



EH&S is also responsible for routine compliance reporting to these same governing external agencies. In 2016, EH&S submitted approximately 88 compliance reports (**Table 1).**

In addition to the regulatory compliance represented in Table 1 and Figure 3, EH&S provides a high level of compliance support to all NMSU entities. EH&S will assist in research of regulations and will provide guidance to ensure an efficient, safe and compliant operation.

2016 - EH&S Compliance Reporting to External Agencies	
Regulatory Agency	**Reports Submitted**
City of LC	5
NM Dept Homeland Security & EM	1
NM Occupational Health Safety Bureau	6
NM Worker's Comp Administration	1
NM Risk Management Division	5
NMED Air Quality Bureau	32
NMED Drinking Water Bureau	15
NMED HW Bureau	1
NMED Radiation Protection Bureau	7
NMED Solid Waste Bureau	10
NMED Surface Water Bureau	1
RM LL RadWaste Board	1
Washington State - Office of Radiation Protection	1
US Environmental Protection Agency	2
US Nuclear Regulatory Commission	0
Total Reports Submitted	**88**

Table 1: Compliance Reporting

RESEARCH SUPPORT

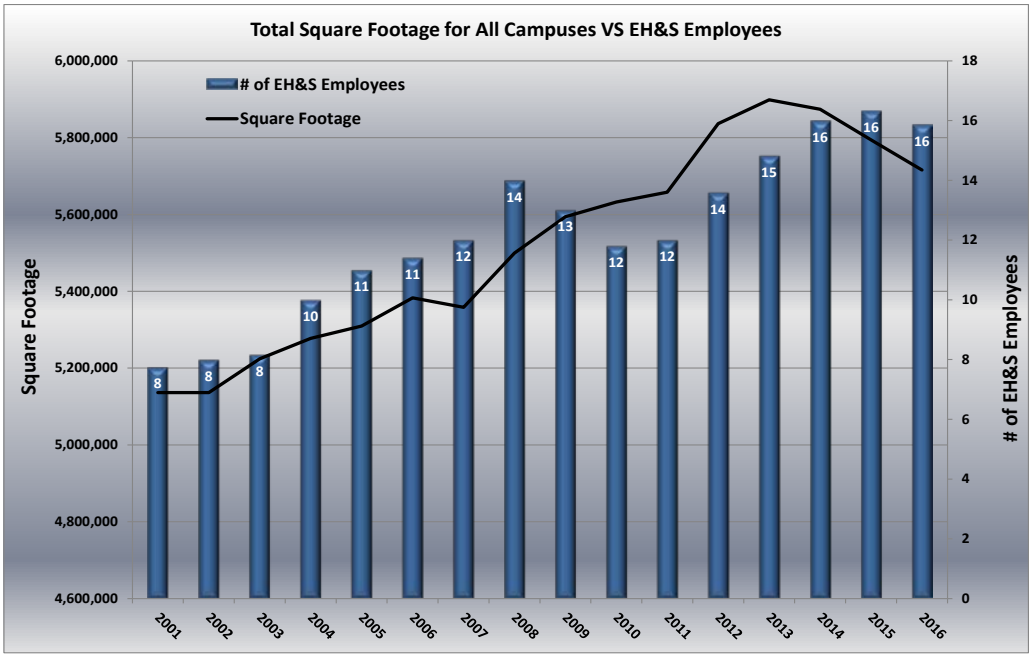
In order to facilitate safe and legally compliant teaching and research, the EH&S department provides regulatory guidance, protocol review, experimental plan assistance, annual inspection, training and hazardous material disposal for the faculty and research teams at NMSU. There are three faculty research oversight committees with significant EH&S implications: the Radiation Safety Committee, the Institutional

Biosafety Committee, and the Animal Care and Use Committee. These committees fulfill specific federal regulatory requirements in the areas of safe use and containment of radioactive and biological materials research and animal protections at NMSU. EH&S is a regular member on two of these faculty research oversight committee, provides administrative support for one and supports the Occupational Health & Safety Program which is essential for the third. This work facilitates state and federal compliance.

UNIVERSITY GROWTH AND EH&S SUPPORT

Based on a benchmarking tool created by another university safety professional, it is possible to achieve a reasonable estimation of the number of EH&S FTEs needed for an institution. The findings indicated that total net assignable square footage (NASF) and Lab NASF are the most statistically significant and pragmatic factors to demonstrate a relationship between square feet and EH&S Staffing.

Figure 4: Square footage to EH&S FTEs



This bench marking tool indicates NMSU is estimated to have 20 FTE EH&S employees based on the factors mentioned. **Figure 4** shows the current relationship.

Maintaining safety staff for basic services and university compliance is a primary goal and focus of EH&S and Facilities and Services.

CENTRALIZED SAFETY TRAINING

EH&S offers safety training classes designed to meet the employee training requirements of specific state and federal regulations to minimize risk and injury. Applicable safety training is delivered to NMSU facilities state-wide by EH&S and has

Figure 5: Safety Training

developed strong partnerships with academic, research and operations departments through our safety training program.

The EH&S Team delivered training to 3971 people in 2016 **(Figure 5 & Table 2).** Of these 3971 people, 3873 of them were trained through approximately 240 instructor-led training classes. The remaining 98 employees were trained via online training. EH&S now offers the following online courses: Annual Radiation Safety Refresher, Annual Bloodborne Pathogen Refresher, Dry Ice Shipper Training and SPCC Awareness (Spill Prevention Controls and Countermeasures).

Course	# Trained
Workplace Safety Awareness	529
Laboratory Safety Refresher (With Hazardous Waste Recap)	466
Defensive Driving	428
Hazard Communication	385
Employee Safety - Instructor Led	382
Bloodborne Pathogen	313
Laboratory Standard	277
Special Training Classes - Seminar	245
Lifting Safety and Ergonomics	184
Asbestos Awareness	126
Hazardous Waste Management	95
Animal Worker Safety	72
Respirator Safety and Refit	71
Biosafety Awareness	70
Ladder Safety	62
Emergency Preparedness	54
Basic Radiation Safety	54
Fork Lift Safety	51
Aerial Lift Safety	31
Worker Protection Standard (WPS)	24
Analytical X-Ray Safety	18
Tractor and Equipment Safety	13
Campus Safety Orientation	13
Basic Laser Safety	5
Nuclear Gauge Safety And Transportation	2
Lockout Tagout	1
Total	**3971**

Table 2: Type of Training and Number of People Trained

In addition to these online courses and with combined university departmental efforts, General Employee Safety is now available online. As required by the State of NM Loss Prevention and Loss Control Regulations, employees must pass a series of applicable compliance training that include General Employee Safety. In 2016, The University achieved a 97% compliance rate in the delivery of online General Employee Safety (8098 employees) (**Figure 5)**.

The strong relationships developed with stakeholders is evidenced in repeated requests for the EH&S team to present special sessions on current safety issues which helps departments comply with multiple regulatory training requirements of annual refreshers.

Highlights of these special classes in 2016 are:

- Annual Refresher of Laboratory Safety for 466 faculty, staff and students working in a lab environment.
- 4 hour - Annual Refresher of Workforce Safety Training for ~125 Facilities employees (**Figure 6).**
- Annual Float Safety Training for staff participating in Homecoming parade and float inspections.
- Front End Loader Training for applicable shop personnel.

Figure 6: Maintenance Safety Refresher Training

EMPLOYEE INJURY & ILLNESS

OSHA 300 LOG

The 2016 annual summary of employee injuries and illnesses is posted on the NMSU safety website. This log shows a count of reportable injury and illness cases and a summary of lost work days or days with restricted work related to these cases. **Figure 7** demonstrates a continued trend of reduced injury and illness cases over the recent six year period compared to previous years.

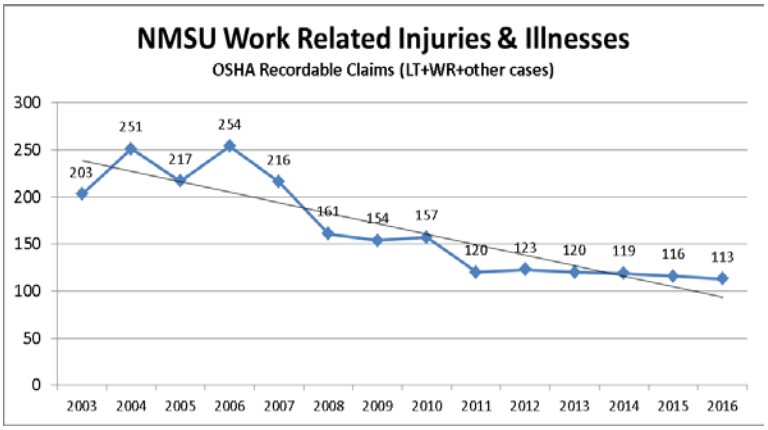
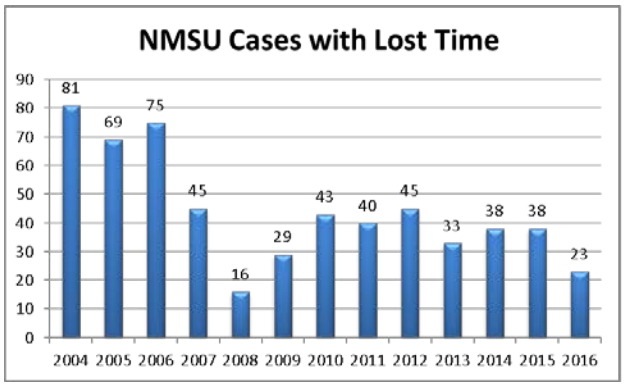


Figure 7: OSHA Recordable Claims

LOSS PREVENTION

Employees are reminded to report work-related injuries and illness to their supervisor. In 2016, with EH&S monitoring and reminders, 90% of supervisors completed a Supervisor Accident Investigation Report and determined cause of the incident and what mitigation steps should be taken. EH&S reviews each report of injury or illness and provides recommendations to the supervisor.

The bar charts below compare cases with lost time and the number of days away from work.



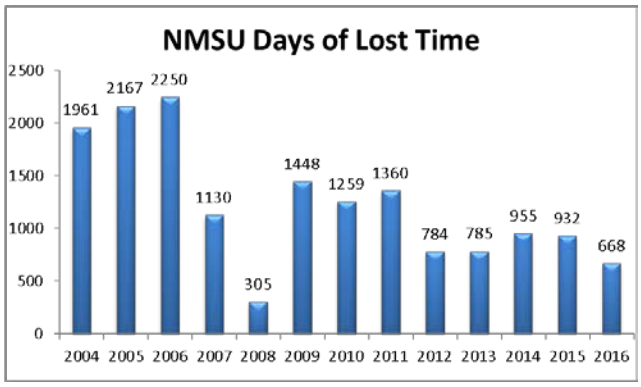
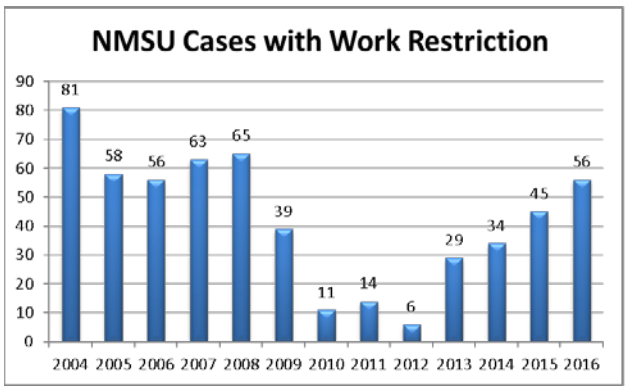


Figure 8: Lost Time

The bar charts below compare cases with work restriction and the number of days at work with restricted duty.



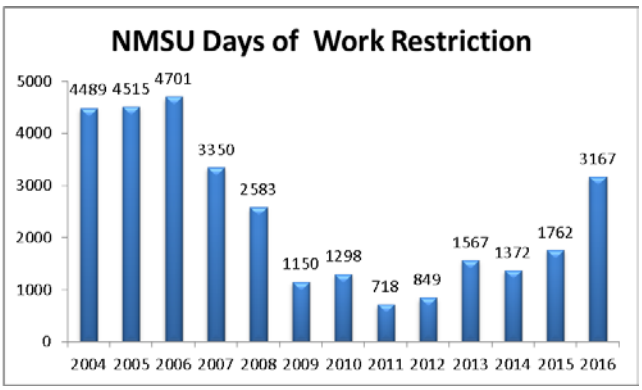


Figure 9: Work Restriction

There was a decrease in the number of cases with lost time and a corresponding drop in the number of lost work days. This positive trend of less serious injuries is accompanied by an increased number of days employees returned to work on restricted duty. This indicates the return to work policies and recently modified procedures are effective and positive.

WORKERS' COMPENSATION

The workers' compensation risk rate premium is weighted heavily for experience which is the cost of injury and illness claims. Specifically, these premiums are based on 90% experience (cost of claims) from the designated five prior fiscal years (FY10 through FY14 for FY17 Premiums). The remaining 10% is exposure data (payroll) compiled from the yearly exposure survey collected in early spring from each insured entity.

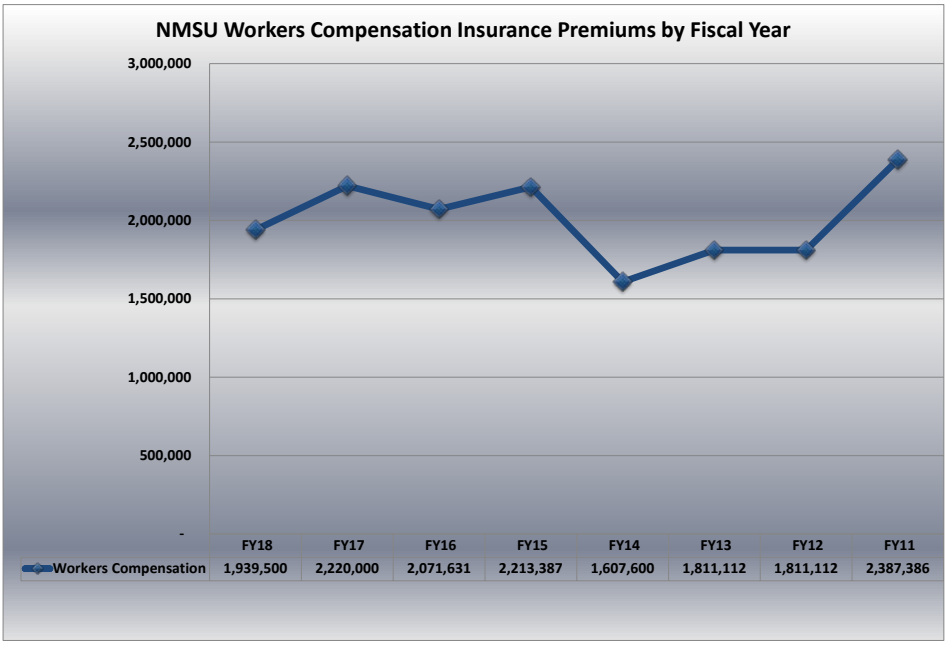


Figure 10: Insurance Premiums Billed

Workers' compensation changes from FY16 to FY17 resulted in an increased premium due to an increase in payroll (exposure) of $2,076,193 and an increase in claims cost (experience) of $711,671. The projected premium for FY 18 posted on the Risk Management Division web site shows a decrease of 12.6% and a positive financial impact of $280,500 in the coming year.

There were 160 worker compensation claims filed in FY 2016 compared to 159 total claims in FY 2015. The top five departments with injuries remained consistent with previous year. Facilities and Services, Dona Ana Community College, Agricultural Science Centers, New Mexico Department of Agriculture and Special Events. Loss Prevention Loss Control Committee reviews these trends quarterly and identifies initiatives to improve outcomes such as return to work procedures and supervisor injury follow up.

Injury Type	FY 16 Cost	% of Total Injuries
Strain	$19,263	38.75%
Contusion	$81,000	24.38%
Laceration	$1,078	11.25%
Puncture	$46,69	5%
Vision	$1,362	3.75%

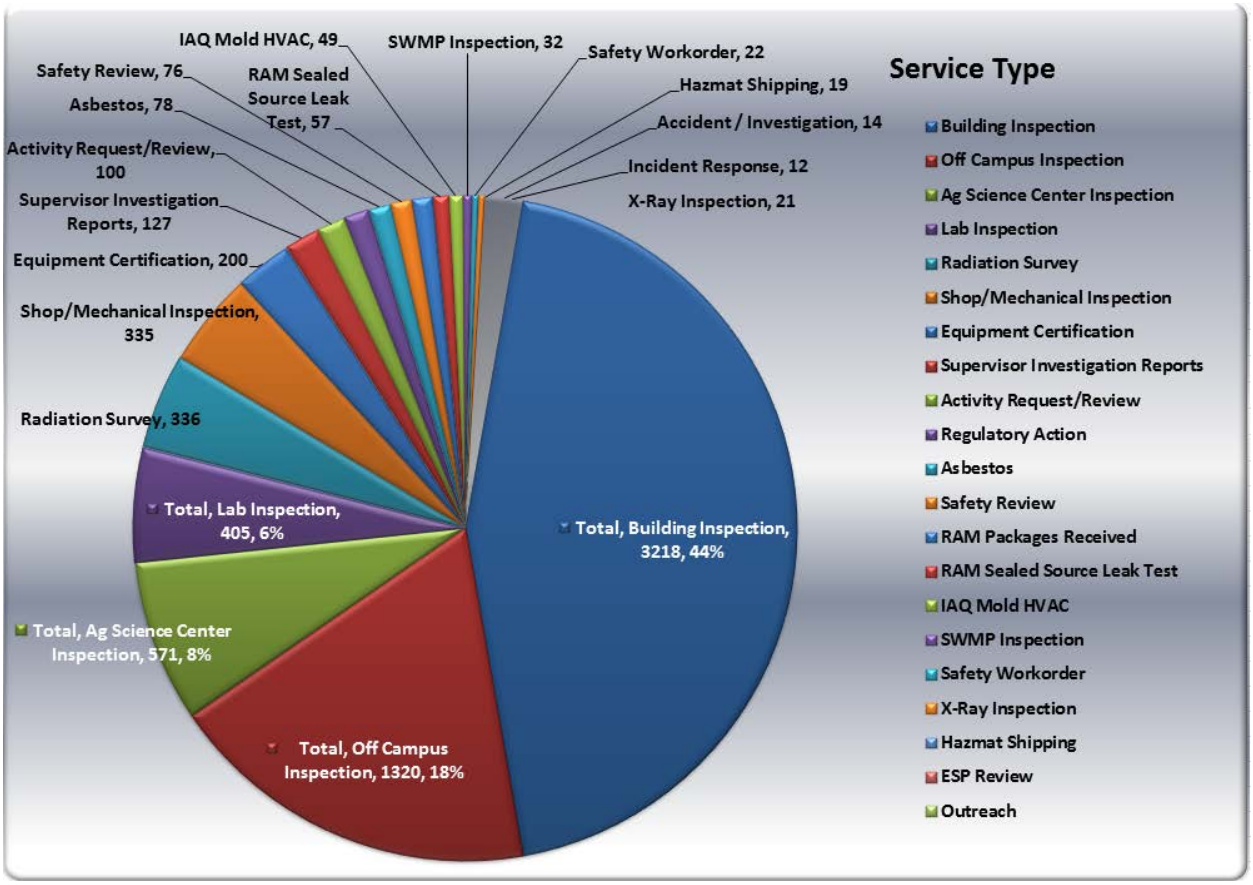
Table 3: Injury Type

Listed in **Table 3** are the injury types with the highest treatment costs for FY 2016. Four categories were consistent with the top injury types in FY 2015 excluding strain and vision. These five categories account for 87% of injury costs. The highest claim to date for FY 16 is $81,000 for a contusion. The highest claim for FY 15 was $190,229 also for a contusion. As the claims age and treatment status remains open, expenses for these claims continue to tally beyond fiscal year end.

LOSS PREVENTION AND LOSS CONTROL PROGRAM OVERVIEW

NMSU is regulated by the State of NM Loss Control Program, NMAC 1.6.4 Rule. To assist the university in complying with this rule and to minimize loss, EH&S provides NMSU with a proactive loss prevention and control program. This is multi-approach safety surveillance of workers and workplace, as well as, after the fact injury investigation to prevent similar incidents. Over 90% of EH&S services focus on proactive inspection of hazardous work areas and ensuring safety equipment is functioning properly **(Figure 11).**

Figure 11: EH&S Services Performed in 2016



EH&S also follows up with the responsible parties to ensure a corrective action plan to address any deficiencies found during inspection. There is currently at a 93% response of corrective actions completed for 2016 **(Figure 12)**.

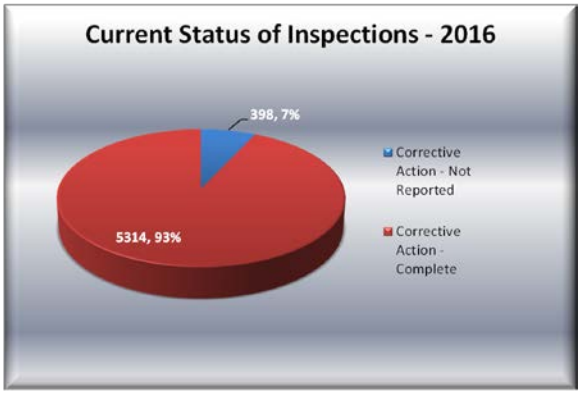


Figure 12: Corrective Action Status

NMSU was audited on April 26, 2017 by the State of NM Risk Management Division (RMD) and received a score of 98%. In the spring of 2016 EH&S hosted a training class given by the State of NM RMD for Incident Investigation in the Workplace. Attendees from various agencies statewide participated in this training. This was a basic overview of best practices and principles to ensure that health, safety and loss prevention activities are a priority and that reporting is performed in accordance with programmatic and business functions.

GENERAL SAFETY INSPECTIONS

LABORATORY AND BUILDING INSPECTIONS

In 2016, EH&S completed laboratory and building inspections throughout the state including the Las Cruces campus, community colleges, agricultural science centers and other affiliated NMSU facilities. EH&S generated detailed inspection reports for each location which identified safety concerns and corrective actions. In 2016 EH&S submitted ~460 work orders worth an estimated $116,000 of Building Repair & Renewal (BRR) funding, to correct facility safety deficiencies and improve safety equipment on main campus.

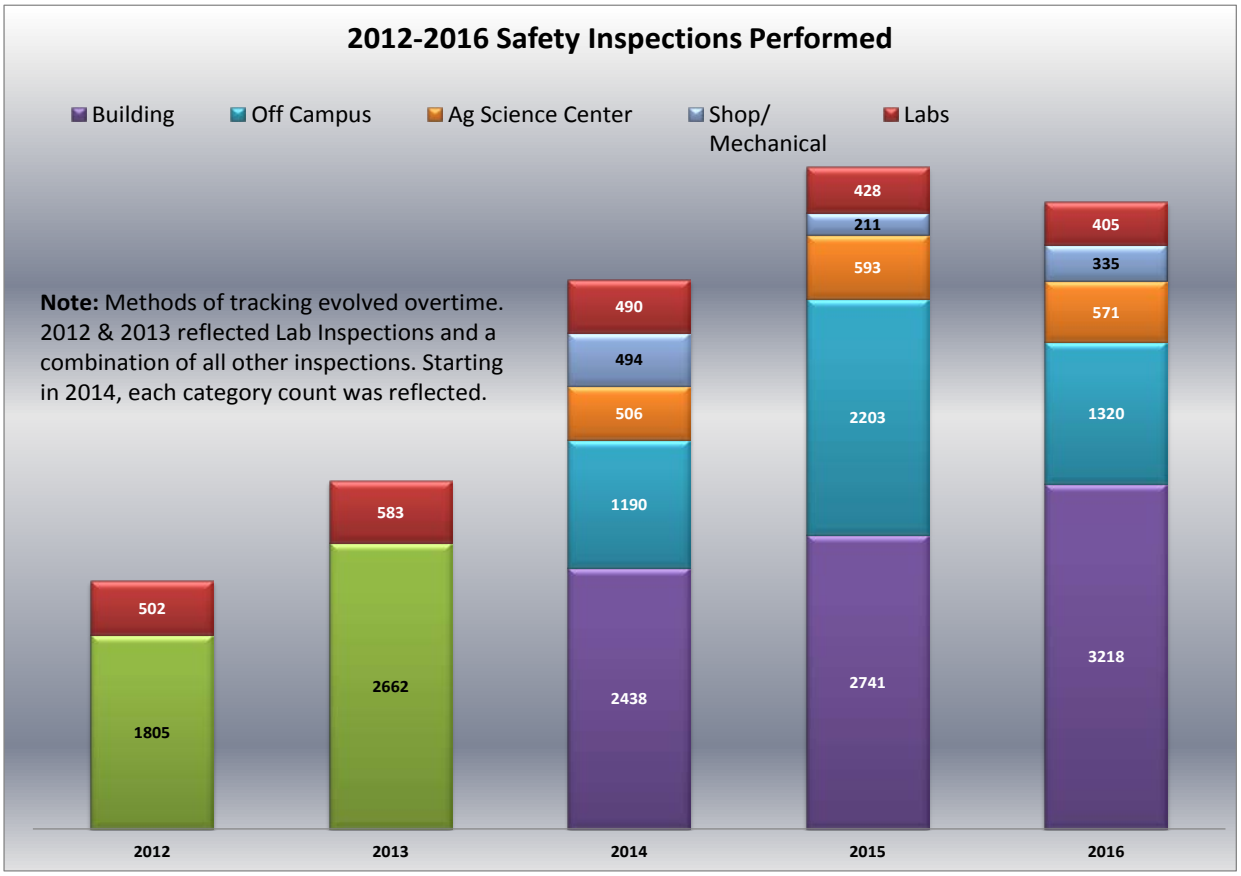


Figure 13: Safety Inspections Performed

High hazard areas including laboratories, shops, hazardous material storage areas, and mechanical rooms are inspected annually by EH&S. These safety inspections are required by federal, state and local regulatory agencies including the State of New Mexico Loss Prevention and Control Bureau.

In 2016, a total of 5849 rooms in NMSU facilities statewide were inspected **(Figure 13)**. There was a 40% reduction in Off Campus inspections in 2016 and a 5% drop overall from 2015. These reductions were primarily due to the retirement of EH&S's primary off campus inspector. Due to NMSU budget reductions, the position was eliminated.

There was a slight reduction in the number of inspections categorized as "laboratory" inspections from last year. This drop was due to several reasons:

1. A major renovation of Jett Hall was initiated in 2015. There are several laboratory and shop areas in this building that were not inspected because of the renovation.

2. Inspections at some remote facilities this year were performed as an overall facility inspection and not a separate lab or shop inspection, therefore not counted as a lab / shop inspection type.
3. Areas inspected as chemical laboratories in previous years were re-categorized as shop, office or general use areas and not inspected as "laboratories". This was especially true in areas in College of Engineering where several labs were electrical or mechanical and contained little to no chemicals.
4. No inspections were performed in some NMSU-related laboratories in the Genesis A complex because of an internal mix-up between EHS managers. These will be inspected in 2017.

The classification of the "type of areas" is in the process of being re-examined to ensure the appropriate type of inspection will be performed in the future.

CHEMICAL FUME HOOD INSPECTION PROGRAM

Chemical fume hoods are a common yet critical safety engineering control in many laboratories at NMSU. EH&S is responsible for performing an annual operational check and certification of all chemical fume hoods on Las Cruces campus. The certification process involves making a set of standard face velocity measurements to ensure the hood flow rate is adequate. It also includes checking the integrity and functioning of the hood surfaces, ductwork, utilities and controls. If the hood fails to pass a critical part of the certification the hood is tagged "out-of-service" and repair WO submitted to Facilities and Services. The certification process is completed after the hood is repaired. In 2016, 200 fume hoods were certified (**Figure 14**). A student inspector is used to perform most hood certifications. This allowed time for higher level EH&S staff to perform other critical functions.

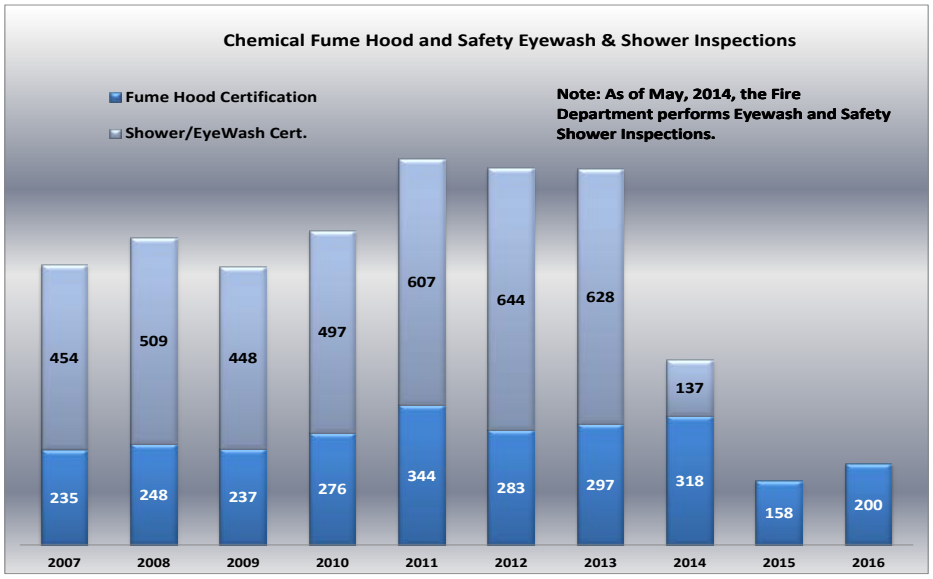


Figure 14: Chemical Fume Hood Inspections

In 2015, the fume hood certification assignment and tracking were migrated into the NMSU AIMS system. Every fume hood on main campus was assigned a unique ID number and entered in the AIM system as an "asset". Preventative maintenance work orders are generated for the certification and closed as each hood is certified. The hood certification data is entered into the AIMS system by the EH&S inspector, approved by the supervisors and ultimately stored in the AIMS system.

Figure 15: Student Inspector

SAFETY SERVICES

In addition to general safety inspections EH&S also provides many other services to minimize loss and risk. These additional services are described in the following paragraphs.

INCIDENT RESPONSE AND SAFETY EVALUATIONS

There were 153 responses to calls and concerns by our stakeholders, primarily involving indoor air quality concerns and concerns of asbestos, this was a 24% decrease compared to last year (**Figure 16**).

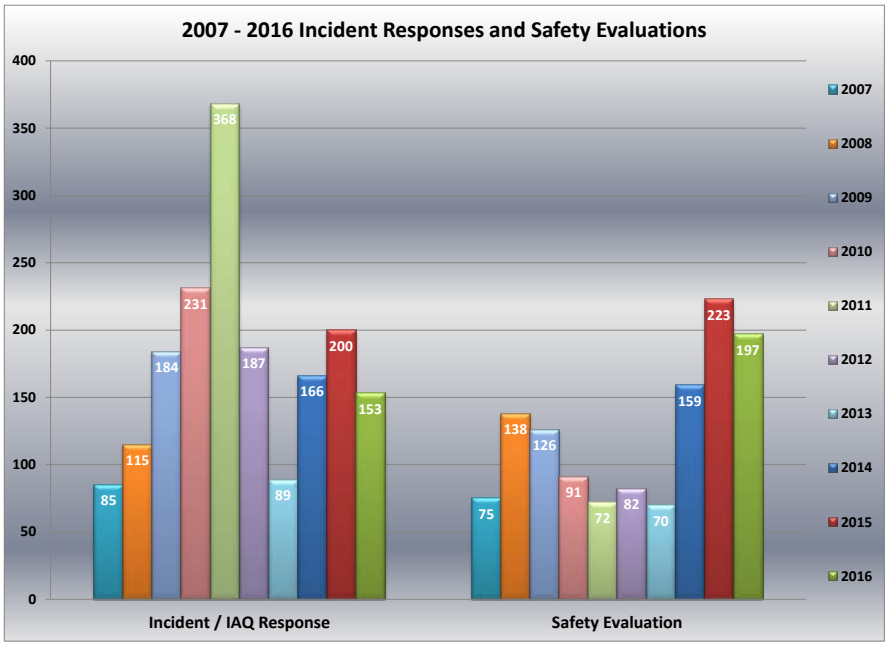


Figure 16: Incident Response and Safety Evaluations

EH&S perform safety evaluations of various work activities, research experiments, and campus activity events. These evaluations are performed to ensure all regulatory requirements are met and that safe practices are in place before an activity or an experiment occurs. In 2016, EH&S performed 197 safety evaluations (**Figure16**).

VEHICLE AND UTILITY CART SAFETY

As part of the NMSU Driving Policy and the State Risk Management Loss Prevention and Control, all employees must be issued either a NMSU driver's permit or a utility cart permit to be eligible to drive university owned vehicles. EH&S provides the defensive driving course as well as completes driver history checks to ensure validity of their driver's license. EH&S performs this license validation for every new driver and for three year permit renewals. This year there were 428 people that attended the Defensive Driving Course and a total of 1151 driver's licenses were validated and permits issued (**Figure 17**).

Out of the 1151 permits issued, 271 of them were for utility cart permits (**Figure 17**). The utility cart permit does not require the defensive driving course, but does require a license validation.

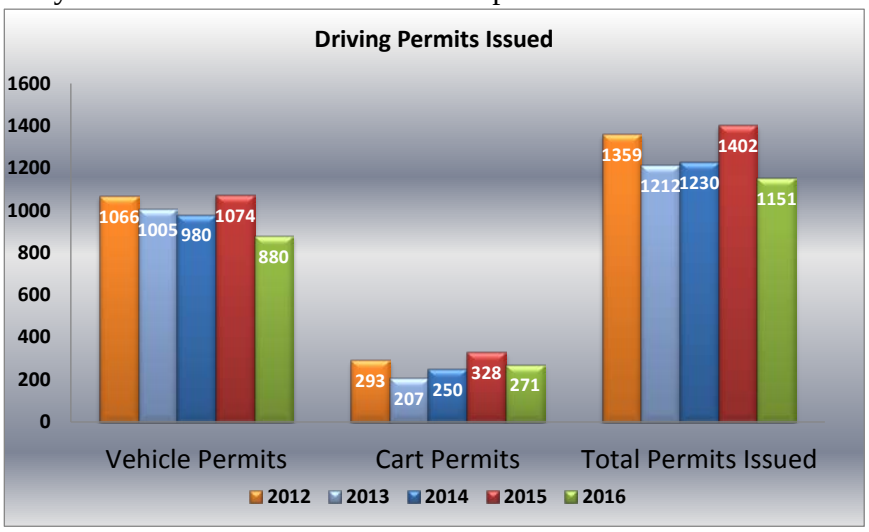


Figure 17: Driving Permits Issued

BICYCLE SAFETY

NMSU follows the Essential Elements of a Bicycle Friendly America; Encouragement, Education, Enforcement, Engineering and Evaluation. EH&S strives to promote and provide a more bicycle-friendly campus.

In 2016 EHS installed a new separated walkway along Jordan from Corbett to the BN Bookstore and supported the new bike lanes along Espina Street. New bike facilities for 2016 include new bicycle racks at the Activity Center, Rentfrow Gym, and Corbett Center; as well as an additional bike fix-it station by Hernandez Hall. EHS worked with the City of Las Cruces on city wide bicycle friendly upgrades and with Velo Cruces Bike Club on more related events. EHS advice on major pedestrian and bike related projects, e.g. McFie, Frenger, & International Mall upgrades and, along with the BFU Taskforce and Sustainability Council continue the effort to obtain a campus Bike Share Program.

EH&S hosted several bike safety events this year including:

- Information & "Look for Me Glow" safety gear at the Fall AggieFest.
- Bike maps, info, repairs & bike swap the Fall & Spring Bike Expos.
- Youth bike training at Fall & Spring Aggie Family Bike Rodeos.
- Campus safety rides and group rides in the Homecoming Parade.
- Supported Annual Ride of Silence & community outreach at Ride Right Ride Bright & Jingle Bell Toy Ride.

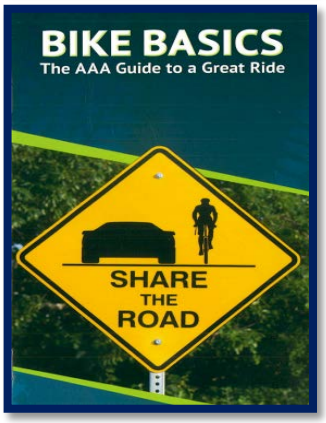
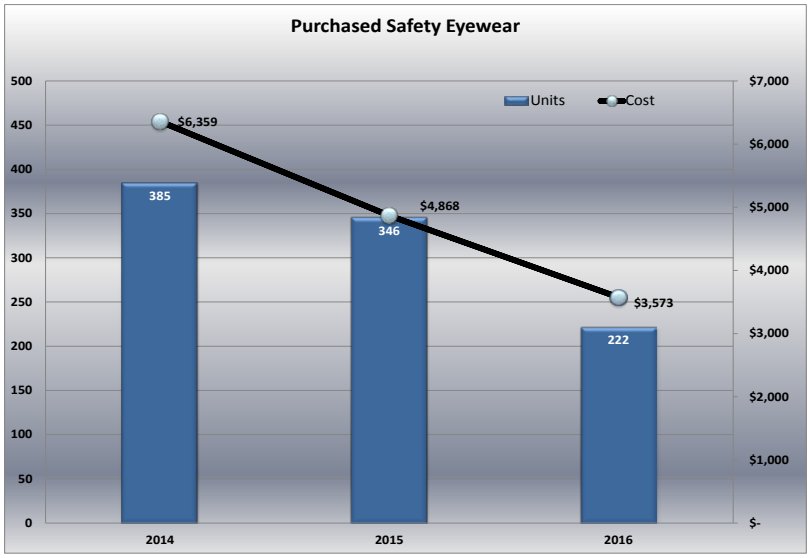


Figure 18: Safety Eyewear



SAFETY EYEWEAR

The EH&S Department facilitates the management of safety eyewear to employees that is applicable to their job function. This service is beneficial to NMSU as a mechanism to ensure safety eye protection meets the OSHA requirements for protective eyewear (OSHA 1926.102), as well as the American National Standards Institute (ANSI) standards.

EH&S partners locally with Walmart to provide prescription safety glasses. This local convenience provides a better service to NMSU employees, allows them to use their vision insurance (if applicable) and is more cost effective for NMSU. EH&S coordinated with departments and facilitated 36 requests for safety eyewear consisting of 21 pairs of prescription and 15 non-prescription safety eyewear (**Figure 18**). There were also 138 pairs of safety eye protection distributed to new lab personnel taking laboratory related classes from EH&S.

SAFETY INITIATIVES AND EMERGENCY PREPAREDNESS

Since the events of 9/11, EH&S has coordinated Safety & Security Initiatives at the beginning of each semester to raise awareness and collaborate with other departments in emergency planning and training. The safety initiatives and emergency preparedness support this year include:

- Created a new Emergency Information Tab on safety.nmsu.edu.
- Developed a Guide to Prepare a Departmental CoOP.
- Distribution of NMSU Safety, Health & Security initiatives and annual refreshers.
- Maintain and update All Hazards Emergency Operations Plan and CART Contact and Line of Succession Information.
- Testing of department Emergency Action Plans through unannounced fire drills with the NMSU Fire Department.
- Testing of the Emergency Notification tools and updating emergency contact lists for security personnel badges.
- Chairing University Safety Committee, Co-chair for Communicable Disease Preparedness Committee and Emergency Preparedness Committee.
- Conducing Continuity of Operations Plan reviews and processing designated essential personnel listings.
- Monthly collaboration with key NMSU staff on Emergency Planning Committee.
- Assisted in engaging Central Administration and University Administrative Council in tabletop scenarios related to flooding and emergency preparedness.
- NMSU and the State of NM collaborated with NM Department of Health in a full exercise drill to plan and develop community and state-wide public health emergency response.

Figure 19: Link to All Hazards Emergency Operations Plan

PROGRAM MANAGEMENT

EH&S manages several specialty programs designed to meet a variety of local, state and federal worker safety and environmental protection regulations:

1. Asbestos Abatement Program
2. Environmental Compliance Program
3. Hazardous Materials Shipping Program
4. Hazardous Waste Program
5. Radiation Safety Program
6. Biosafety Program (Support)

Each of these programs is discussed in detail in the remaining sections of this report.

ASBESTOS ABATEMENT PROGRAM

In 2016, EH&S continued to provide NMSU departments with timely professional response and management of NMSU asbestos as well as mold and material containing lead. EH&S established the NMSU Asbestos Management Program in 2009. The program is designed to ensure proper identification and management of asbestos containing materials in the older (pre-1981) NMSU buildings. Asbestos abatement for minor building remodels and general maintenance is sub-contracted to an outside licensed vendor with EH&S project oversight and funded by the BR&R account.

Figure 20: Asbestos Abatement

EH&S has one dedicated employee and an alternate which are both qualified annually as asbestos inspectors. EH&S responsibilities are to provide immediate initial inspections, perform surveys and monitoring to assess potential environmental hazards, and conduct Asbestos Awareness Training for campus personnel. Facilities maintenance personnel attend the annual awareness training that provides information on potential locations of asbestos, type of materials that may contain asbestos and the NMSU procedure for notification.

During the year EH&S completed 34 abatement projects that generated 1621 cubic yards of waste (**Figure 21 below)**. This high volume compared to the last four years was due to a) the complete abatement of Monagle Hall as required before its demolition and b) the complete interior abatement of Jett Hall as part of it $20M remodel. Also, of the 34 projects, 19 projects were of larger size and or type that required permitting through NESHAP permits from NMED**.** EH&S supported the campus on 127 reviews and incidents on asbestos and mold related issues.

In 2016, EH&S established a beneficial pricing agreement in cost per unit for various abatement operations with six asbestos abatement contractors.

We arranged the abatement of Jett Hall for its remodel and directed Projects Development & Engineering with the abatement of Monagle Hall. EH&S also increase its knowledge of hazardous building materials by completing Master HBM Surveys on Hadley Hall, Breland Hall, and Gerald Thomas Hall.

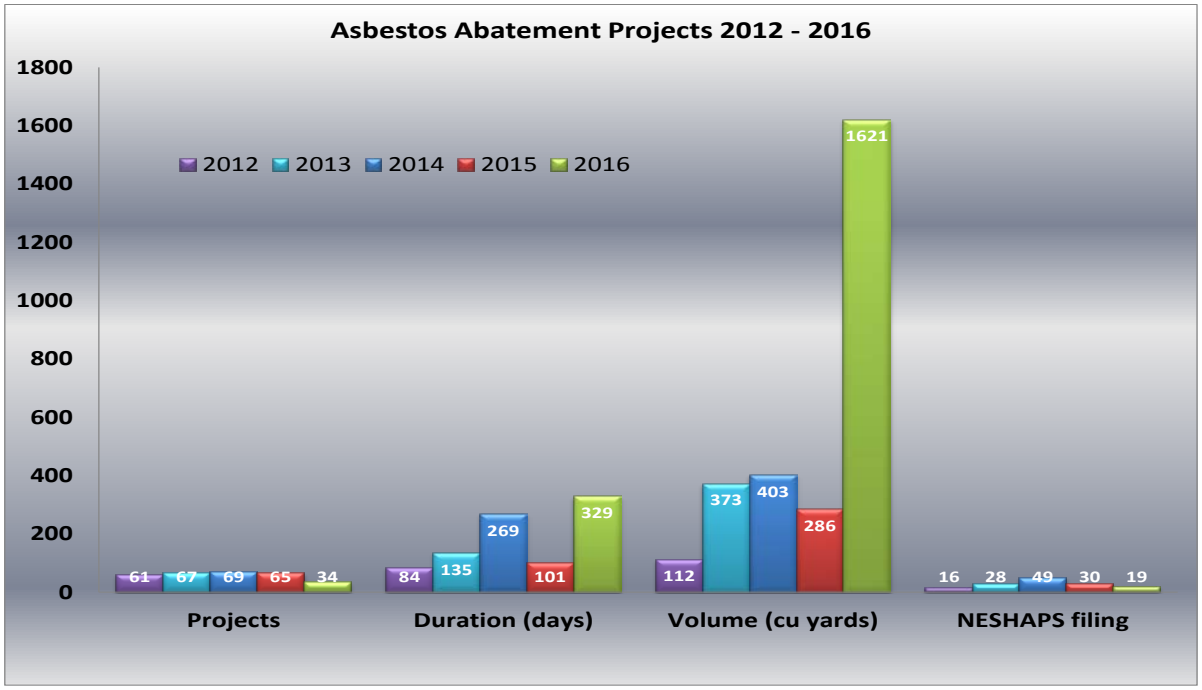


Figure 21: Asbestos Abatement Metrics

ENVIRONMENTAL COMPLIANCE PROGRAM

TITLE V AIR PERMIT AND NSR AIR PERMIT

NMSU maintains two EPA/NMED Air Quality Permits; a Title V Air Permit and New Source Review (NSR) Air Permit. These air permits ensure NMSU is monitoring campus emissions with the goal to keep them as low as possible.

EH&S completed/ensured nine detailed air reports were filed accurately and on time to EPA/NMED:

1. Annual Air Report
2. (2) Semi-Annual Air Reports
3. Air Emissions Inventory
4. Greenhouse Gas Report
5. Turbine Test Protocol
6. Turbine Air Emissions Test Results
7. Air Fees
8. Generator Location/Monthly Operational Log

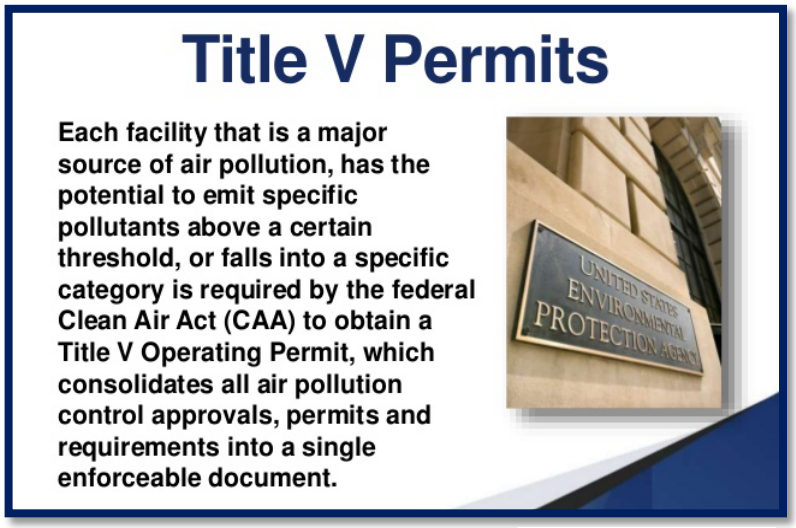


Figure 22: Title V

These reports ensure we are documenting compliance with all air quality laws, collecting appropriate data, and identifying positive trends to build on or negative trends for correction to better protect health and the environment.

Additional special air compliance issues addressed in 2016 were:

- New Title V and NSR Air Permits Received: NMSU's two main air permits were updated and re-issued by the New Mexico Environment Department. There are a number of new requirements NMSU must ensure compliance with, from stricter turbine usage tracking to opacity tests for generators.
- Additional Reporting: Four additional formal reports were completed and submitted to NMED due to the new air permits: An additional annual air report, semi-annual air report, generator opacity tests, and initial turbine engine exchange notification.
- Remote Niagara Monitoring of Generator Run Times for Police Department: BRR funding was obtained to install remote generator monitoring via computer of the monthly run times for the Police Department. Remote monitoring is much more efficient in tracking generator run times then physically visiting each campus generator monthly.
- Cross Training and Communication Among Staff for Air Quality Issues: To best ensure a successful clean air program EH&S continues to visit the Central Plant at least monthly to meet with key staff on air issues and averages a monthly conference call with the air consultant Weston Solutions to stay current on complex, changing regulations. It is also important to establish cross training on Air Quality within the EH&S Team.

STORM WATER MANAGEMENT PROGRAM (SWMP)

Environmental program activities for EH&S related to regulatory compliance of the EPA-issued MS4 (municipal separate storm sewer system) permit; each year NMSU submits an annual report (to EPA) reporting progress over the previous year, as well as outlining best management practices (BMPs) to complete during the upcoming year.

Figure 23: Stormwater Inspection

Accomplishments in 2016 include the following:

- Submitted the annual update report to EPA and NMED Surface Water Quality Bureau in September, 2016.
- Conducted storm water awareness training as part of the NMSU Hazards Communication training.
- Continued in-house training allowing EH&S inspectors to perform MS4 required inspections as part of their annual safety inspections.
- All critical documents are filed on a network location allowing for quick retrieval.

SOLID WASTE

Regulatory compliance of NMSU's solid waste falls into two distinct categories; closure activities associated with the former

NMSU landfill, and compliance of our two solid waste facilities (Aggie Recycling, and the NMSU Green Waste Compost Facility).

2016 solid waste accomplishments include:

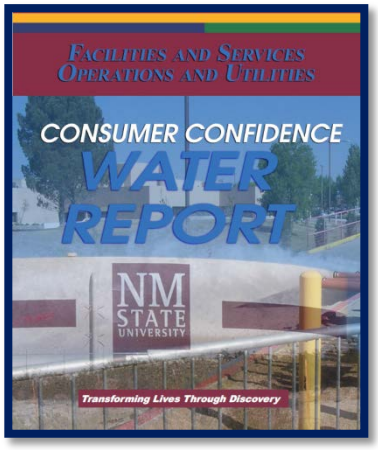
- Completed the closure design per requirements of the 2013 Closure Post-Closure report, and initiate implementation.
- Installed two new monitoring wells at the direction of the NM Solid Waste Bureau as part of the closure requirement for monitoring at the former landfill.
- Submitted all required quarterly methane and semi-annual groundwater sampling monitoring reports.
- Submitted the three NMED-required annual Solid Waste Management reports on time.
- Acted as the NMSU lead on regulatory agency interactions related to applying for a permit to operate a composting facility on the NMSU main campus.

DRINKING WATER

Because of the potential adverse health effects, providing the NMSU community with high quality drinking water is one of the most critical environmental oversight activities. In 2016 drinking water accomplishments include:

- Continued close collaboration with Facilities and Services Utilities personnel to ensure all compliance testing is performed on schedule and reported appropriately.
- EPA-required Consumer Confidence Report; this report was submitted to the NMED in March and posted to the NMSU website, per the required deadlines.

Figure 24: Link to 2016 Consumer Confidence Report



WASTEWATER

NMSU has wastewater discharge permit #82211 with the City of Las Cruces, as they receive/treat all NMSU wastewater. Complying with the discharge permit requirements comprises EH&S compliance activities in this area.

2016 accomplishments include:

- Completed four quarters of the required sampling and reporting to the City of Las Cruces on schedule. No violations were reported.
- System operations within the hydrogen sulfide limits (monitored monthly).
- City of Las Cruces conducted a formal annual inspection of wastewater operations; there were no violations.

Figure 25: Wastewater Awareness Training

SPILL PREVENTION CONTROLS AND COUNTERMEASURES (SPCC)

EPA is the lead federal response agency for oil spills occurring in "inland waters" (which can include dry arroyos), and requires qualified facilities, such as NMSU, to prepare, certify, and implement an SPCC Plan.

During 2016:

- EH&S maintained an inventory of all fuel/oil tanks subject to the SPCC rule.
- EH&S conducted required inspections in order to comply with SPCC regulatory requirements.

HAZARDOUS MATERIALS SHIPPING

In 2016, EH&S took over the primary responsibility to establish a fully compliant hazardous material shipping program for the main campus as well as provide support for other NMSU hazardous materials shipping operations throughout the state. This new program is in compliance with applicable sections of the US Department of Transportation Regulations and requirements of the International Civil Aviation Organization (ICAO) which govern the shipment of regulated hazardous materials by air. EH&S took over the program mid-year and shipped 19 shipments in 2016.

HAZARDOUS WASTE PROGRAM

The EH&S environmental compliance team picked up, researched, processed, and shipped 45,727 pounds of hazardous waste in 2016 compared to 51,000 pounds averaged over the previous five years (**Figure 26**). A trend of decreasing hazardous waste poundage is evident.

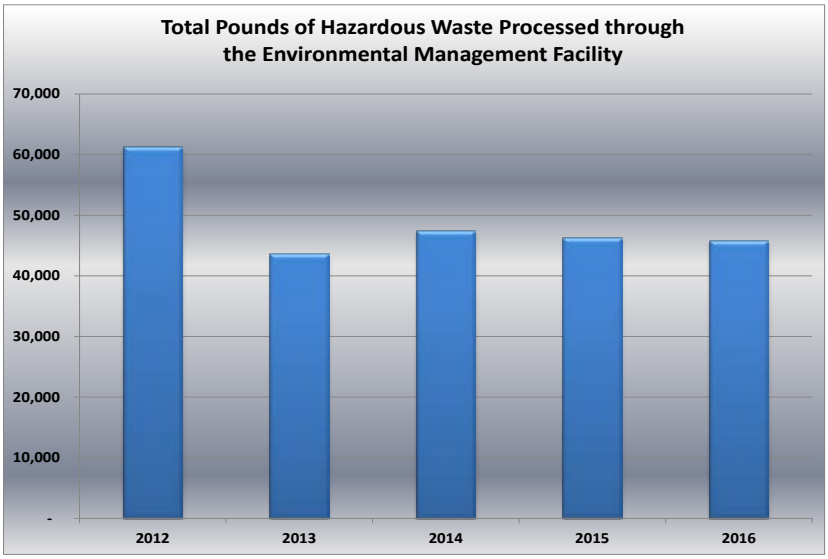


Figure 26: Total of Hazardous Waste through EMF

The team managed 3,117 different chemical items compared to 2,898 items averaged over the previous five years (**Figure 27**). A trend of stabilizing hazardous waste items is also evident. Most large, lower

hazard, old chemical containers on campus have already been disposed. Smaller, higher hazard, lab stock chemical containers still exist and present most cost and labor challenges.

Figure 27: Total Items Handled

Most of the non-routine waste workload resulted from large stock chemical clean outs (greater than 50 chemical items at one time) from 18 different departments/labs: ANRS (4), Biology (2), Chemical Engineering, Mechanical Engineering, WERC, PES, EPPWS, EM Lab, Leyendecker Farm, DACC, Art, SWAT, Media Productions, and the Swimming Pool. Overall, all hazardous waste items were disposed of legally and without any incident.

Physically opening chemicals and pouring/mixing compatible chemicals into 55-gallon drums keeps the cost per pound for disposal low. Mixing chemicals is risky however, and requires keen attention to detail. In cumulative, the 5.0 FTE team spent 30 hours in restrictive, encapsulating protective suits and respirators while mixing chemicals on 15 different days **(Figure 28)**. Overall, no adverse reactions occurred during mixing activities.


Figure 28: Hazardous Waste Team Bulking Chemicals

WASTE VOLUME AND COST TRENDS

Overall, NMSU's 45,727 pounds of routine hazardous waste was disposed of at a total cost of $88,000. The good news is that there was a decrease in the cost per pound for routine hazardous waste disposal in 2016. The cost per pound in 2015 was $2.01 versus $1.93 in 2016 (~4% less) **(Figure 29)**. This is the third consecutive year the cost per pound has decreased. This can be attributed to no staff turnover. The same waste management team has been together for 3 consecutive years and remains focused on efficiencies. The breakdown of each type is displayed in **Figure 30**.

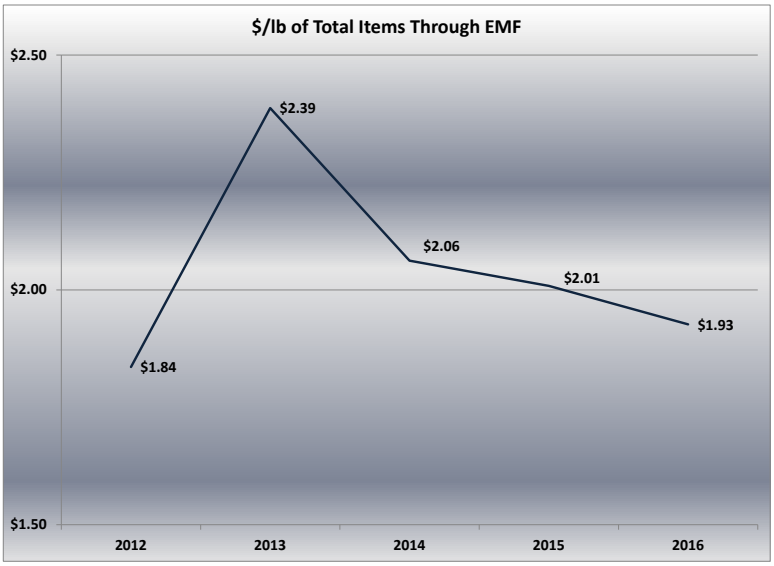


Figure 29: Cost per LB

The team continues to coordinate with eleven different environmental services contractors to handle each waste type to ensure continued cost savings: Clean Harbors, Veolia, Stericycle, USA Can Recycling Warehouse, Fuels, PSC, ACT, NEMS, Airgas, Interlab and Corralitos Landfill. By using specialized contractors for different projects, we are often able to reduce disposal and regulatory costs by thousands of dollars. Coordinating with numerous contractors however leads to additional complexities with manifests, transportation, and billing.

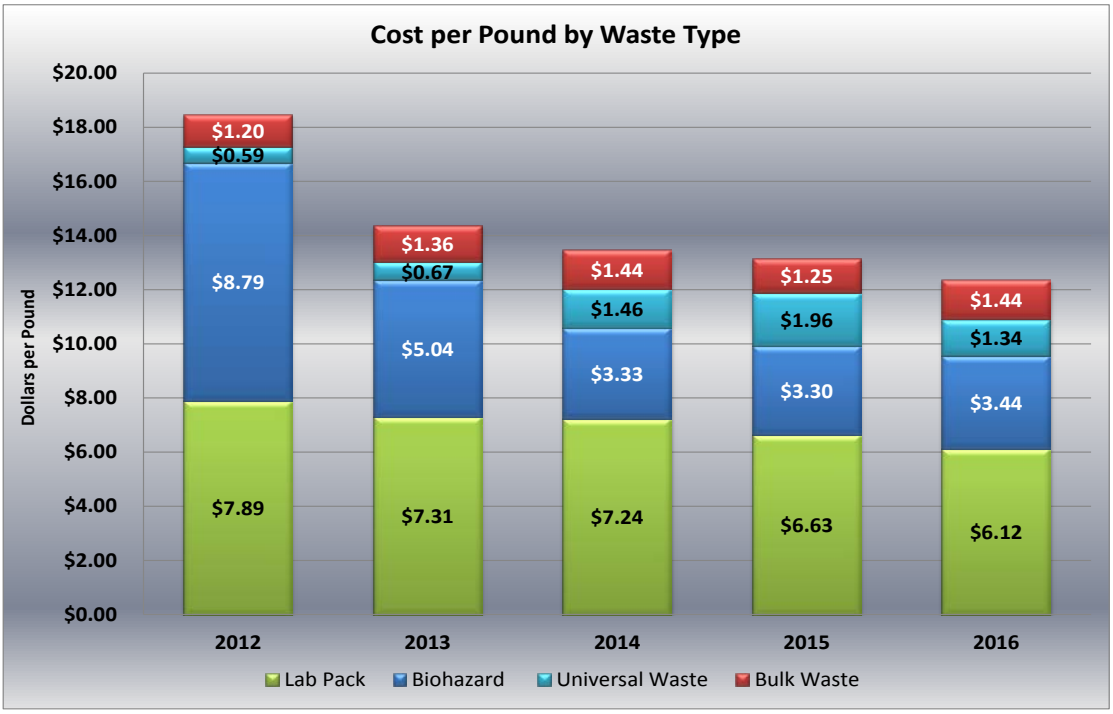


Figure 30: Cost per LB per Type of Waste

Another contribution to controlling disposal cost is that EH&S bulks or co-mingles compatible hazardous waste versus lab packing those chemicals. The average cost per pound of hazardous chemical waste varies by 5 fold with bulk waste being the lowest and lab pack waste being the highest (**Figure 31**).

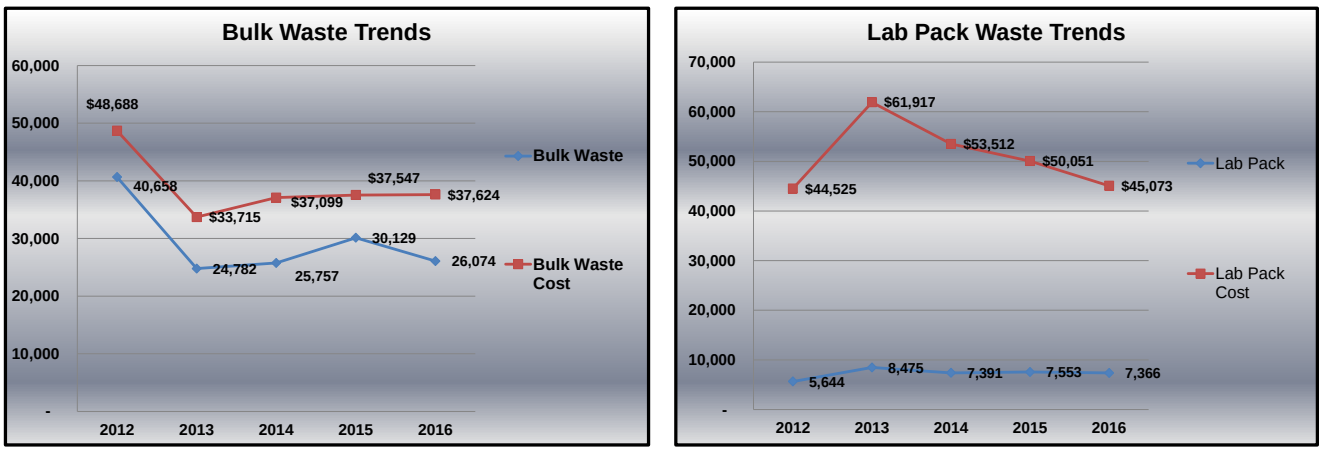


Figure 31: Bulk Waste & Lab Pack Waste Trends

EH&S contains the waste cost by researching and combining similar waste types so that ~80% of the chemical waste can be shipped in bulk containers for disposal. The cost of bulk waste this year was $1.44 per pound compared to $6.12 per pound for lab pack waste (**Figure 30**) which is shipped off without additional handling. ***The savings in 2016 were $121,922 in avoided disposal fees that are due to bulking 78% of the chemical waste versus lab packing.***

RECYCLED WASTE

Campus operations, instruction and research programs generate a wide variety of hazardous and special wastes. Although EH&S cannot control the types or volume of wastes being generated, we do strive to recycle as much as legally possible (**Figure 32**). Special contracts are established for the routine Universal Waste streams including batteries, mercury containing bulbs, and ballasts. We also recycle used oil whenever possible. Also of particular note is that there were five separate times EH&S was able to (overall) re-distribute ~1200 pounds of useable chemicals to other campus departments, or return to manufactures, resulting in a savings of ~$3,000. EH&S environmental compliance team will continue to dedicate additional effort to seek out alternate disposal solutions in a commitment to sustainability at NMSU.

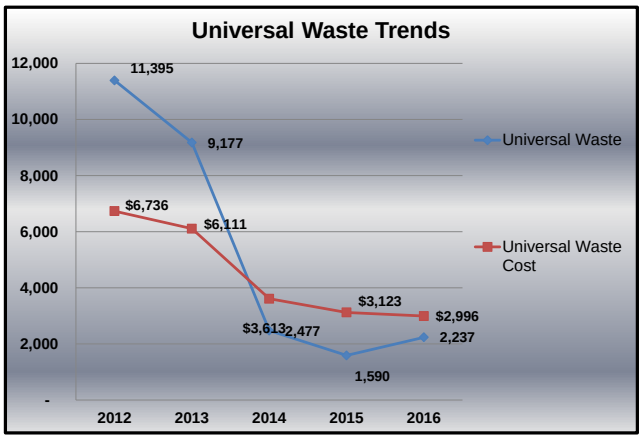


Figure 32: Universal Waste Trends

HAZARDOUS WASTE REPORTS & INSPECTIONS

Hazardous waste reports, inspections and standard operating procedures (SOPs) are essential components of a successful waste management program. Federal and State mandated reports completed and filed accurately and on time were: Tier II Chemical Inventory, Biennial Hazardous Waste Report, Hazardous Waste Fees, and PCB Log. There were no external regulatory inspections in 2016. There were sixty new entries made into the EH&S Master Chemical Dictionary detailing specific hazard and disposal best practices. The team completed the first internal Hazardous Waste Management Master Schedule and Hazardous Waste Training Master Schedule detailing key program requirements, due dates, and staff person assigned.

HAZARDOUS WASTE TRAINING

In 2016 there were a number of training classes taught:

- 3-Hour Hazardous Waste Management Presentations: 10 (~100 attendees)
- 20-Minute Hazcom Hazardous Waste Presentations: 30 (~300 attendees)
- 20-Minute Hazardous Waste Lab Refresher Presentations: 5 (~350 attendees)
- 20-Minute Special Facility Shop Presentations: 5 (~100 attendees)
- 30-Minute Hazwoper Presentations: 2 (~12 attendees)

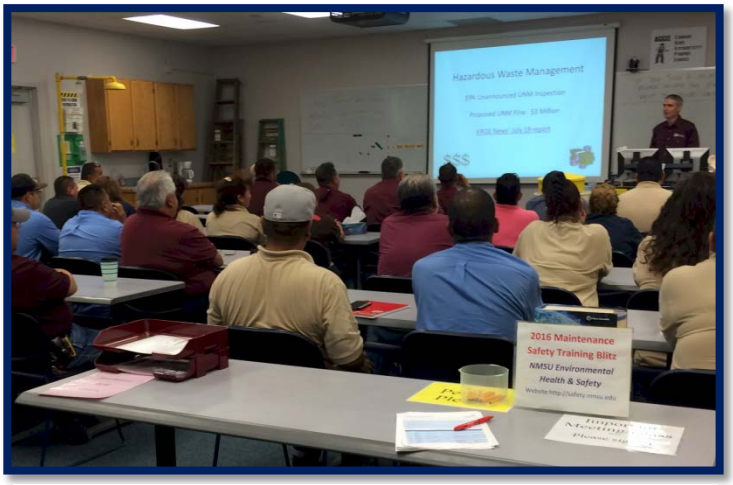


Figure 33: Facilities & Services Hazardous Waste Presentation

HAZARDOUS WASTE SPECIAL PROJECTS

In 2016 there were a number of large, special projects managed by the EH&S team:

- 9 Hazardous Material Incident Responses, a number of them serious; from a Boron Trifluoride Diethyl Etherate floor spill in the Chemistry Department requiring full face respirators to a lead iodide spill in Chemical Engineering.
- 39 Unknown chemicals were picked up on campus and identified internally. Charge backs resulted in $1,950 recovered to EH&S budget.
- 20 High Hazard Chemicals (peroxide formers, additional solvent required) were identified and stabilized for safe disposal without additional contractor assistance saving ~$5,000.
- Standard internal EH&S quality control testing identified 84 significantly mislabeled chemicals that were re-labeled to ensure safe processing and reduced contractor fees.

Figure 34: Chemical Spill Incident Response

- A special landfill disposal project resulted in ~3,000 pounds of lightly automotive fluid contaminated sand being disposed of as non-hazardous waste saving ~$3,000.
- Re-distributed (3) 55-gallon drums of water treatment chemicals from the FS Central Plant to the DACC Central Plant saving ~$2,000.
- Carlsbad Shipments: Assisted CEMRC with two special hazardous waste shipments totaling 2,000 pounds and costing $7,300.
- Supply total costs decreased ~$2,000 in 2016 compared to 2015 due to continued focus on more cost efficient supply contractors and larger orders to reduce shipping costs.

RADIATION SAFETY PROGRAM

Most radioactive materials and devices that produce ionizing radiation used in research and teaching at NMSU are regulated through licenses or registration certificates issued to the university by the New Mexico Environment Department Radiation Control Bureau (NMRCB) as required by the State of New Mexico radiation protection regulations (NMAC 20.3). The university administration established the University Radiation Safety Committee (URSC) to develop and maintain a university-wide radiation safety program and provide oversight of the use of licensed materials and devices at NMSU. The EH&S Radiation Safety Manager (RSO) and technical staff are responsible for providing the

Figure 35: Monitoring for Radioactive Materials

day-to-day administrative and technical functions required to effectively manage the NMSU Radiation Safety program. The specific responsibilities of the URSC and RSO are described in detail in the NMSU Radiation Safety Manual.

NMSU Radioactive Material Licenses

The university currently holds 3 separate radioactive material (RAM) licenses issued by two government agencies. Two of licenses were issued by the NMRCB and one license was issued by the U.S. Nuclear Regulatory Commission (USNRC).

1. **NMRCB License #AB151-44** is a Type A/B Specific License of Broad Scope which authorizes the use of licensed RAM and sealed radioactive sources at the Las Cruces campus as well as other, remote NMSU facilities.
2. **NMRCB License #AN317-15** is a facility-specific which authorizes the use of licensed RAM at the Carlsbad Environmental Monitoring & Research Center (CEMRC). The CEMRC is a university-owned research facility administered by the College of Engineering, located in Carlsbad, NM. The facility contains several radiochemistry laboratories, an instrumentation laboratory and an *in-vivo* radio-bioassay laboratory (lung and whole body counter).
3. **USNRC License #30-35283-01** – is a Specific License which authorizes NMSU researchers to use a nuclear gauge (soil moisture gauge) at the Bureau of Reclamation Brackish Groundwater National Desalination Research Facility in Alamogordo, NM. This facility is a Federal facility and the USNRC has exclusive jurisdiction over the use of radioactive materials or devices at this facility.

Each license defines the specific radioisotopes, chemical form, maximum quantities, and general conditions or limitations for use of licensed material.

NMSU X-Ray Device Certificates of Registration

The university is the holder of five X-ray Device Certificates of Registration (COR) issued by the NMRCB which cover 23 x-ray devices currently in use across several departments and administrative units. Each certificate lists the location devices are authorized to be used, limitations on use and other conditions for using the devices covered under the COR.

1. **UO 13 0004** – Blanket registration certificate which covers 11 separate analytical x-ray devices used for teaching and research located several different departments. The types of devices covered under this COR include analytical x-ray diffraction (XRD) systems, x-ray florescence (XRF) systems, x-ray irradiators and radiography x-ray machines that are used for teaching (exposures to training phantoms only, no live patient exposures are authorized under this COR).

2. **MO 13 0249** – Registration certificate for one medical radiography x-ray machine located in the NMSU Student Health Center.

3. **DO 13 0272** – Registration certificate covers six intraoral, one panoramic and one portable hand-held dental x-ray machines located in the DACC Dental Clinic.

4. **BD 13 0292** – Registration certificate for one dual-energy x-ray absorptiometry (DXA) system in the Kinesiology & Dance department.

5. **UO 45 0370** – Registration certificate for one portable, hand-held x-ray fluorescence (XRF) machine located at the NMSU Agricultural Science Center – Farmington.

6. **UO 15 0061** – Registration certificate for an analytical x-ray diffraction (XRD) system located at the CEMRC in Carlsbad, NM.

EH&S Radiation Safety Services

The NMSU RSO EH&S supports the mission of the URSC and provides several critical services to the university and authorized users including:

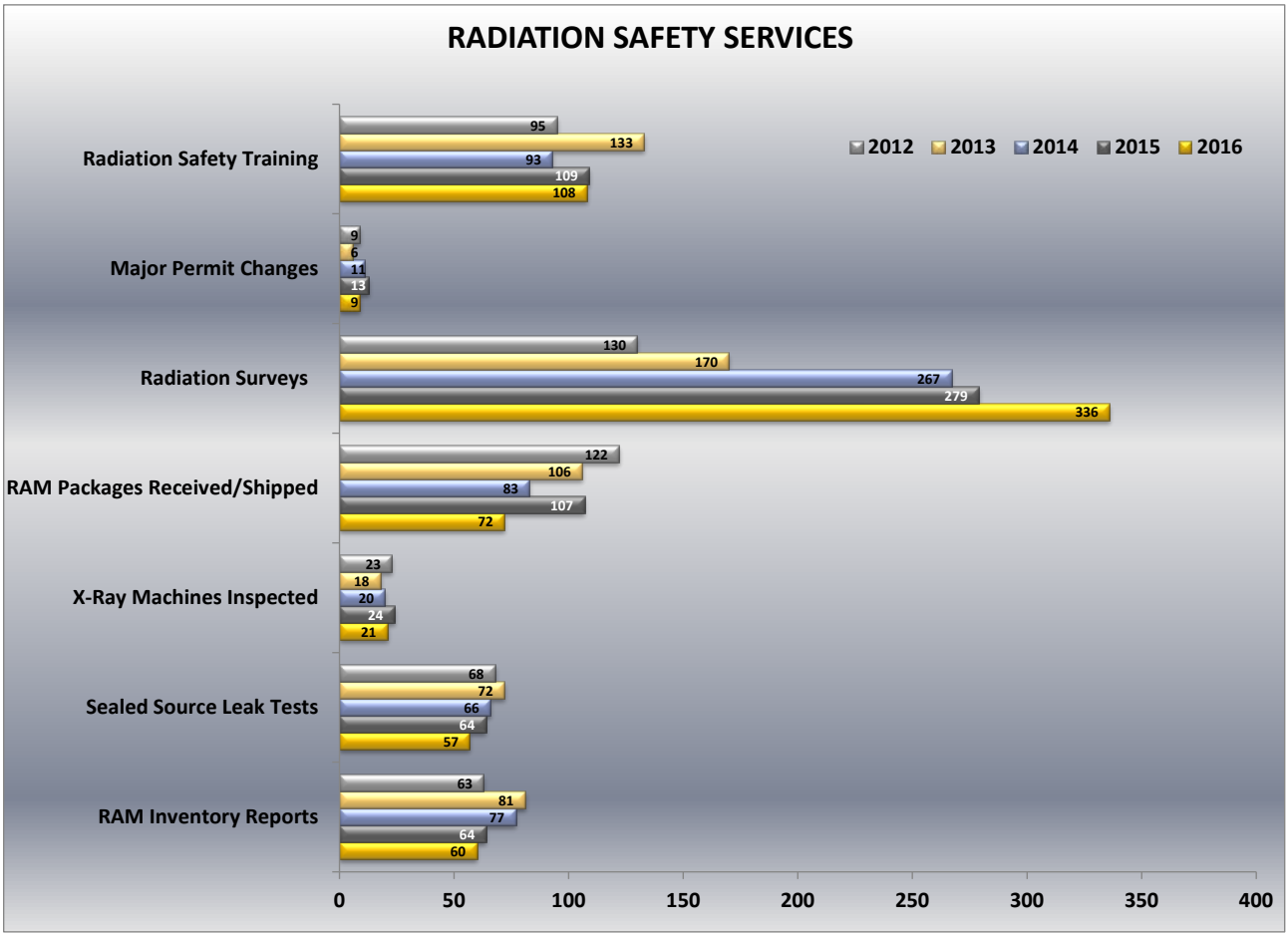
1. Maintaining RAM licenses & X-ray CORs issued by regulatory agencies.
2. Maintaining a university-wide inventory of licensed RAM and registered radiation-producing devices.
3. Developing and delivering various types of radiation safety training for employees.
4. Performing routine compliance inspections of authorized users including periodic contamination surveys in authorized RAM use and storage areas.
5. Performing routine audits and surveys of x-ray machines and other registered radiation producing devices.

Figure 36: Liquid Scintillation Counter

6. Performing leak testing of sealed radioactive sources.
7. Centralized shipping / receiving of packages containing RAM.
8. Decommissioning of equipment and authorized RAM use and storage areas.
9. Perform various administrative functions for the URSC.
10. Management of radiation safety program records.

A summary of common EH&S radiation safety program services are in included in **Figure 37.**

Figure 37: Radiation Safety Services



2016 RADIATION SAFETY PROGRAM HIGHLIGHTS

- An inspector with the NMRCB performed an unannounced inspection at the Las Cruces campus in June 2016. The inspection reviewed activities conducted under the radioactive material license AB151-44. The inspector focused on program compliance with the New Mexico Radiation Protection Regulations (20.3 NMAC) and the specific conditions listed on the license. There were no violations noted and the inspector commented in the final inspection report that the program "appears to be appropriately maintained".
- In May 2016 an inspector from the NMRCB performed an unannounced inspection at the CEMRC. The focus of the inspection was to verify that the x-ray diffraction (XRD) instrument operations and associated safety program documentation were in compliance with the New Mexico Radiation Protection Regulations (20.3 NMAC) and the specific conditions listed on the COR. The inspector reviewed worker and area radiation monitoring records, verified instrument engineering safety controls were functioning properly and took measurements to verify that while the instrument was operating the radiation dose rate in the area were within allowable limits. No deficiencies were noted during the inspection and the facility x-ray operations were in compliance with New Mexico Radiation Protection Regulations.
- Radioactive material license #AN317-15 (CEMRC facility) was renewed by the NMRCB in August 2016. The types of licensed material, activity limits and conditions listed on the new license did not change from the previous license (AN317 -14). The new license expires July 21, 2021.

- There were changes to the membership on the URSC during 2016. Dr. Punam Thakur, Senior Scientist with the CEMRC was appointed the URSC in March 2016 after the retirement of Dr. Dennis Hallford. Dr. Thakur is an experienced chemist whose research interests include the study of the chemistry off-elements, heavy metal decontamination methodologies and environmental radiochemistry. In addition, Mr. Michael Stewart announced was retiring from the DACC Radiologic Technology program in December 2016 and stepped off of the URSC. Mr. Stewart was a valued member of the committee for the over 15 years. Prior to leaving Mr. Stewart provided the committee the names of some people he recommended as possible replacements. A new member will be appointed in 2017.
- The annual license fees for both AN317-15 (CEMRC facility) and AB151-44 (Las Cruces campus) were significantly increased as being revaluated by the NMRCB during the year. Additional fee categories were applied to both licenses. Prior to 2016, the annual license fees were $7,350 and $1,700 for the AB151-44 and AN317-15 licenses, respectively. Effective 2016 the annual fees on both licenses was increased by $10,005 when the fee categories for Special Nuclear Material and Source Material, in addition to the Byproduct category were applied. This raised the annual fees to $11,705 for the AN317-15 license and $17,355 for the AB151-44 license.
- Approximately 320 pounds (32 individual containers) of radioactive waste generated at the Las Cruces campus was disposed using decay-in-storage in 2016. This disposal method allows NMSU to decay out radioactive wastes containing radioisotopes with half-lives less than 120 days and then disposing of the waste as non-radioactive waste.

- Approximately 940 pounds of bulk dry radioactive wastes, discarded radioactive sources, aqueous liquid waste and mixed liquid wastes (radioactive combined with RCRA hazardous waste) generated by activities at NMSU-owned facilities was disposed through a licensed waste broker in 2016 (**Table 4)**. The cost of disposal for these wastes was $22,757.

Table 4: Disposal summary of radioactive & mixed waste generated at the Las Cruces campus in 2016

Description	Number of Containers	Volume (cubic feet)	Weight (pounds)
Solid Dry Active Waste (DAW)	3	22	740
Aqueous Liquid Lab Pack	1	4	84
Sealed Source Lab Pack	1	1.3	20
Exempt Liquid Scintillation Cocktail (Flammable Liquid)	1	4	47
Mixed Waste Lab Pack (Corrosive / Toxic Liquids)	1	4	50
Totals	**7**	**35.3**	**941**

BIOSAFETY PROGRAM

In July of 2010, the Biosafety Manager position and program responsibilities were assumed by the Research Compliance Office. The decision to reorganize the position was based on the source of funding and desire to expand the position for a wider breadth of research compliance issues. EH&S works closely with the Biosafety Manager and Research Integrity and Compliance Office.

EH&S maintains a strong role in the biosafety mission by providing the following direct support and services:

- Training equipment and facilities.
- Administrative support for biosafety training including scheduling classes, registration, and managing training records **(Figure 38).**
- Web based Bloodborne Pathogen (BBP) training module delivers required annual refresher training (**Figure 38**).

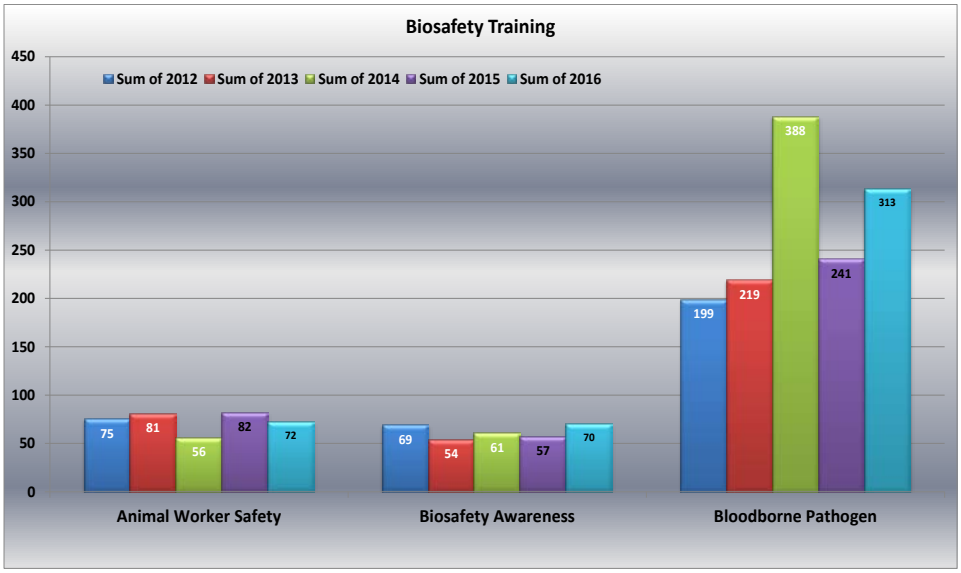


Figure 38: Biosafety Training

- Acting as voting primary reviewer and voting member of the Institutional Biosafety Committee.
- Collaboration with Biosafety Manager on safety programs, occupational health and safety and emergency preparedness response.
- EH&S support of the Institutional Animal Care and Use Committee (IACUC) – several incidents involving potential exposures were effectively mitigated by collaboration of EH&S and IACUC Chair. This is critical for success of the occupational health and safety program for animal workers.
- A full exposure hazard assessment for plumbers and waste water handlers was performed in 2015 and specialized training and immunization is completed as needed.

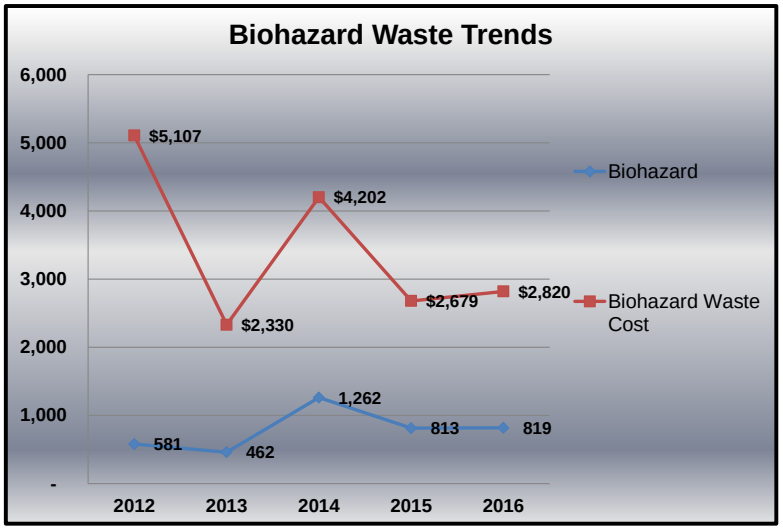


Figure 39: Biohazardous Waste Trends

- EH&S handles disposal for all biohazardous waste requiring incineration.
- EH&S has negotiated waste cost reduction through stricter segregation and switching treatment technologies from incineration to steam sterilization. *This dual approach results in huge cost savings that will continue forward for years to come (**Figure 39**).*

EQUAL OPPORTUNITY STATEMENT

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THIS COMPLETES THE 2016 ENVIRONMENTAL, HEALTH & SAFETY ANNUAL REPORT

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