

Hazardous Waste Management Commission Report

January - March 2016

Quarterly Report



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Hazardous Waste Management Commissioners

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"The goal of the Hazardous Waste Program is to protect human health and the environment from threats posed by hazardous waste."

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Past issues of the Hazardous Waste Management Commission Report are available online at dnr.mo.gov/env/hwp/commission/quarterlyreport.htm.



Missouri Department of Natural Resources
Hazardous Waste Program

Letter from the Director

Dear Commissioners:

This edition of the quarterly covers the first quarter of the year from January 1st through March 31st. As on the calendar we begin the transition from winter to spring, this quarter also brought with it a number of other transitions that will have an impact on the commission and the Hazardous Waste Program.

The quarter began with a change to the Commission Counsel, as Kara Valentine, who served in that capacity since August 2010, left the employ of the Attorney General's Office (AGO) to take a Deputy Director position with the State of Nebraska's Department of Environmental Quality. She leaves very big shoes to fill at the AGO, and will be very much missed by the staff there and at the department as she has been very involved in many important and high profile department projects. With her departure, Brook McCarrick was named as the new Commission Counsel. We welcomed Brook to this position at the February meeting and the program looks forward to working with her as she assumes these duties.

Also, during this quarter, we saw the departure of one of our commissioners, as Andy Bracker announced that he would be resigning from the commission. Commissioner Bracker has served on the commission since December 2007. He brought a unique perspective to the commission, with his knowledge of Brownfield issues, and will certainly be missed. We greatly appreciate his service and dedication to the commission for these past eight and a half years and certainly wish him the best going forward in his future endeavors. His departure leaves the commission with two vacant commissioner positions.

This quarter also marked my final quarter as the Staff Director for the commission and the program, and the transition to Steve Sturgess as the new Staff Director. While I am excited about my new opportunity to head the Public Drinking Water Branch, it certainly was not an easy decision for me to leave this position where I have served the past five and a half years. You have been an outstanding commission to work with and I believe we have truly accomplished a lot over this period. I want to thank all of you for your support during this time, and wish you all the best going forward as you continue to take on the important work that is performed by this commission and the staff of the program. I am confident you will be in great hands with Steve taking on this new role, and hope you will continue to support him and the program in the manner that you have always done.

As I close, I want you to know it has been both an honor and a privilege for me to have served as your staff director, and I will do what I can to assist the commission and the program through this transition. I want to thank all of you again for all that you do as commissioners and for your continued service to the state of Missouri.

Sincerely,



David J. Lamb
Director

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Brownfields/Voluntary Cleanup Program Certificates of Completion

Brownfields are real property where the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight and takes development pressures off greenspaces and working lands. Through this program, private parties agree to clean up a contaminated site and are offered some protection from future state and federal enforcement action at the site in the form of a “no further action” letter or “certificate of completion” from the state.

The Brownfields/Voluntary Cleanup Program (BVCP) issued 22 certificates of completion for various sites from January through March 2016. This brings the total number of certificates of completion issued to 805.

South Avenue Water Tower - Springfield

The South Avenue Water Tower Site is located at 944 South Ave. in Springfield. The site has been owned by City Utilities of Springfield since 1957. A water tower occupied the site from 1927-1994. The site also has a pump house and pad for a former transformer substation. Lead was detected in surface soils and may have been related to paint residue from the water tank.

From December 2014 to June 2015 investigations were conducted to fully delineate soil impact and determine which areas contained lead contamination above levels for safe residential use. The highest concentrations were found beneath the footprint of the former tower. Delineation indicated contamination extended to the property lines on the northern, eastern and western boundaries of the site. Off-site sampling determined contamination was present above residential target levels on the property to the east while no impact was detected on the property to the north west. Sampling could not proceed past the northern property line due to the presence of a residential structure. Throughout July 2015, approximately 450 tons of contaminated soil was excavated from the subject site and adjacent property for disposal to the Springfield Sanitary Landfill. Post excavation confirmatory wall and floor sampling found remaining lead contamination on each parcel is within levels for safe residential use. Clean fill was used to backfill the excavation pit upon completion of remediation activities.

Review of existing data regarding polychlorinated biphenyl (PCB) impact related to a former transformer pad on the eastern portion of the site determined contamination is below applicable target levels for safe residential use. The site therefore qualifies for unrestricted use. The department determined the site is safe for its intended use.

Des Peres Center - St. Louis

The Des Peres Center site is located at 11925 Manchester Road in St. Louis. This 9.6-acre site is located on the north side of Manchester Road and approximately one-half mile east of the Interstate 270 interchange. This site is currently a shopping center. Dry cleaning facilities previously occupied the easternmost tenant space of the main building on-site

Delineation of the soil and groundwater indicated impact of tetrachloroethylene (PCE) above Soil Type 2 non-residential target levels in the immediate area of the building. This high level of contamination drops off to below residential values before reaching the site boundary to the north and east. An air sample, taken from the inside of the building, shows there is no detectable impact of PCE vapors in the building. Representative soil and groundwater concentrations are below appropriate levels for non-residential land use, and after ten quarters of groundwater monitoring the groundwater plume of contamination appears stable. The department determined the site is safe for its intended use.

Kemper Military School Administration Building - Boonville

The Kemper Military School Administration Building site is located at 701 3rd St. in Boonville. The 60,364-square-foot administration building is vacant and in a deteriorated condition. In December 2013, the city had an asbestos inspection noting asbestos-containing material (ACM) present in the form of pipe insulation, floor tiles along with several other hazardous materials. Future plans call for the demolition of the building and building a park.

Site investigations indicated the presence of lipopolysaccharide binding protein (LBP), ACM and household hazardous waste in the building. The remedial action plan consisted of the removal of all ACM from the building and basement. The ACM materials removed were various floor tile, vinyl floor tile mastic, thermal system insulation and associated mudded joints. The household hazardous waste will be removed prior to demolition of the building. The building materials containing LBP will be removed by demolition and disposed of as non-hazardous demolition waste. The demolition of the building is not part of the BVCP cleanup and will occur sometime later this year. The department determined the site is safe for its intended use.



Kansas City Community Center - Kansas City

The Kansas City Community Center site is located at 1514 Campbell St. in Kansas City. This is a 0.99 acre site in Jackson County, consisting of one 60,000 square foot building and one 12,000 square foot building, currently being used as a substance abuse treatment and behavioral healthcare center. The site has historically been used as a school and multimedia center. A 4,000 gallon heating oil underground storage tank (UST) was closed in place in 2006. Soil and groundwater sampling analysis indicated the presence of fuel oil and volatile compounds from a leak in the UST.

Site characterization activities indicated the presence of soil and groundwater contamination, as well as the presence of petroleum free product in the area of the closed in-place heating oil tank. The extent of the contamination was defined and groundwater monitoring that continued over a period of a couple of years demonstrated decreasing concentrations of contaminants, as well as a decrease in the total volume of free product (FP). Analytical samples of FP showed it to be degraded and did not pose a risk to the indoor air inhalation pathway for residential land use. As FP is still left in the ground and could pose a risk for the dermal contact pathway, land use is restricted to a residential use in which children would not be exposed, as well as an advisory for construction workers in the form of a soil and groundwater management plan, which includes procedures for managing contaminated soil and groundwater if encountered during construction activities. The department determined the site is safe for its intended use.

The Community Center received a \$200,000 federal Brownfields Cleanup Grant from the Environmental Protection Agency (EPA).

Brown Transfer and Storage (former) - St. Joseph

The Brown Transfer and Storage (former) site is located at 402 S. 5th St. in St. Joseph. In 1923, it was a candy factory; in 1934, it was owned by Farmers Cooperative Marketing and then Wholesale Drugs occupied the building.

Site investigations indicated the presence of volatile organic compounds (VOCs) below the building footprint. Contaminants of concern exceeding the 2006 Missouri Risk-Based Corrective Action

(MRBCA) screening levels were located in areas associated with historical use of the building and loading docks. Sub-slab soil gas samples reported quarterly concentrations of VOCs below EPA residential target sub-slab regional screening levels (RSLs) and below MRBCA residential Tier 1 soil vapor Risk-Based Target Levels (RBTLs).

Prior to BVCP enrollment, the hazardous materials identified in the basement and boiler room had been removed and disposed per local, state and federal regulations. ACM was abated in the boiler room in 2013 and 2014. Following ACM abatement in 2014, the boiler room was sealed off with concrete block walls. The department determined the site is safe for its intended use. The current use of the site is commercial warehouse and storage. Future site use is expected to remain the same.

Eagle Bluffs TCS Historical Release Site - Columbia

The Eagle Bluffs TCS Historical Release Site is located at 6700 W. Route K in Columbia. Historical petroleum impacts to soil above the default target levels (DTLs) were discovered during installation of a new natural gas pipeline. Initial response efforts were coordinated with the department's Environmental Emergency Response (EER) Section, and included removal and proper disposal of excavated soils identified as impacted with residual petroleum compounds, and installation of 12 temporary test borings for collection of soil and groundwater samples. Compounds detected in soils exceeding MRBCA DTLs were benzene and total petroleum hydrocarbon (TPH) as gasoline-range organics (GRO). There were no compounds detected in groundwater above MRBCA DTLs.



Site investigations indicated soils with petroleum odors above the MRBCA DTLs and additional investigations were implemented to delineate the petroleum impacts. Soil vapor sampling was performed to determine whether benzene and TPH-GRO concentrations in soil vapor exceed the applicable RBTLs. Soil vapor samples show the concentrations of contaminants below the applicable MRBCA Tier 1 RBTLs for the residential Indoor Inhalation of Vapor Emissions pathway, Soil Type 1. Residuals of the contaminants of concern are low so as to not pose a risk to current or future potential receptors. The department determined the site is safe for its intended use.

ANR Pipeline

The ANR Pipeline Company site consists of 15 properties housing natural gas pipeline meter stations. The ANR Pipeline sites are located in the counties of Gentry, Harrison, Holt, Nodaway, Putnam, and Worth. These sites are referred to as Albany Meter Station, Barnard Meter Station, Bethany-Gallatin Meter Station, Craigh Meter Station, Fairfax Meter Station, Forest City Meter Station, Graham Meter Station, Grant Meter Station, Maitland Meter Station, Maryville Meter Station, Mound City Meter Station, Ravenwood Meter Station, South Maryville Meter Station, Stanberry Meter Station and the Unionville-Milan Meter Station. Until the 1980s, the meters used mercury to monitor gas flow. Mercury may have been released into soil during maintenance operations at each station.

Soil and building surfaces were sampled at the stations. Soil samples were below MRBCA DTLs on nine of the properties, which allows for unrestricted use. Mercury vapors were not found in buildings above the action level for a 40-hour work week as established by the National Institute for Occupational Safety and Health (NIOSH). No remediation was required at these stations.

On the remaining six properties, elevated levels of mercury in soil and mercury vapors in building surfaces were found. Contaminated soil was removed and disposed of in an appropriate landfill. Confirmation samples confirm that remaining soil meets the MRBCA DTLs, which allow for unrestricted use. Building interiors were cleaned to an action level for a 40-hour work week as established by the NIOSH. Contaminated materials removed from buildings were properly disposed. The department determined all sites are safe for their intended use.



The meter stations will continue in operation along the pipeline, utilizing non-mercury-containing meters which have been in place since the use of mercury-containing meters was discontinued in the 1980s.

Display Center - Hannibal

The Display Center site is located at 929 Warren Barrett Drive in Hannibal. Past site uses have included: wood working, blacksmith, printing, dry kiln, auto repair, bus barn and various manufacturing uses. The property was most currently used for manufacturing wood and plastic display signs. A Phase II Environmental Site Assessment (ESA) indicated vinyl chloride and total petroleum hydrocarbons-diesel range organics (TPH-DRO) in groundwater above MRBCA DTLs.

Site investigations indicated the presence of VOCs in the groundwater at the site, particularly 1,2,4-trimethylbenzene, naphthalene and vinyl chloride at concentrations above the MRBCA DTLs. A Tier 1 Risk Assessment and several quarters of groundwater monitoring were performed to evaluate whether the groundwater plume was increasing, stable or decreasing. The report indicates the plume is stable or decreasing.

Historically, two USTs for the storage of diesel and gasoline were removed from the site in 1994. The UST investigation and remediation is being performed under the Hazardous Waste Program's (HWP) Tanks Section and is not included in this certificate of completion. A separate restrictive covenant will be included in that investigation. The department determined the site is safe for its intended use.

Month	Active	Completed	Total
January 2016	227	787	1014
February 2016	209	804	1013
March 2016	217	805	1022

New Sites Received: 13

January

MFA Grain Silos, Springfield
 Century Foundry, St. Louis

February

Tip Top Cleaners - Clayton Road, St. Louis

March

Armour/Troost Redevelopment, Kansas City
 Enbridge Pipelines Buffalo Station, Buffalo
 Creve Coeur Cleaners (former), St. Louis
 Claychester Cleaners, Kirkwood
 Hardee's (former), Eldon
 Pruitt-Igoe Housing Project Parcel 1, St. Louis
 Raben Tire, St. Louis
 McQuay-Norris Manufacturing, St. Louis
 Pruitt-Igoe Housing Project Parcel 2, St. Louis
 Pruitt-Igoe Housing Project Parcel 3, St. Louis

Sites Closed: 22

January

South Avenue Water Tower Site, Springfield
 Brown Transfer and Storage (former), St. Joseph
 Display Center, Hannibal
 Eagle Bluffs TCS Historical Release Site,
 Columbia

February

Kemper Military School Administration Building,
 Boonville
 Albany Meter Station, Albany
 Barnard Meter Station, Arkoe
 Bethany-Gallatin Meter Station, Bethany
 Community Center, Kansas City
 Craig Meter Station, Craig
 Fairfax Meter Station, Craig
 Forest City Meter Station, Bigelow
 Graham Meter Station, Graham
 Grant Meter Station, Grant City
 Maitland Meter Station, Maitland
 Maryville Meter Station, Maryville
 Mound City Meter Station, Mound City
 Ravenwood Meter Station, Ravenwood
 South Maryville Meter Station, Maryville
 Stanberry Meter Station, Stanberry
 Unionville-Milan Meter Station, Unionville

March

Des Peres Center, St. Louis

Drycleaning Environmental Response Trust Fund

The department’s Drycleaning Environmental Response Trust (DERT) Fund provides funding for the investigation, assessment and cleanup of releases of chlorinated solvents from drycleaning facilities. The two main sources of revenue for the fund are the drycleaning facility annual registration surcharge and the quarterly solvent surcharge.

Registrations

The registration surcharges are due by April 1 of each calendar year for solvent used during the previous calendar year. The solvent surcharges are due 30 days after each quarterly reporting period.

Calendar Year 2015	Active Drycleaning Facilities	Facilities Paid	Facilities in Compliance
January - March 2016	123	59	47.97%

Calendar Year 2016	Active Solvent Suppliers	Suppliers Paid	Suppliers in Compliance
January - March 2016	11	8	72.73%

Cleanup Oversight

Calendar Year 2016	Active Sites	Completed Sites	Total
January - March 2016	19	16	35

New Sites Received: 0

Sites Closed: 0

Reimbursement Claims

The applicant may submit a reimbursement claim after all work approved in the work plan is complete and the DERT Fund project manager has reviewed and approved the final completion report for that work. The DERT Fund applicant is liable for the first \$25,000 of corrective action costs incurred.

Month	Received	Under Review	Paid/Processed
January	0	3	0
February	0	7	4
March	0	6	1

Month	Received	Under Review	Paid/Processed
January	\$0.00	\$46,107.60	\$2,182.50
February	\$0.00	\$65,804.30	\$62,449.60
March	\$0.00	\$195,333.93	\$13,065.50

Five reimbursement claims were processed/paid during this period:

Busy Bee Laundry	Rolla	\$15,248.00
Charter Dry Cleaning	Ellisville	\$3,181.90
Fenton Plaza 48	Fenton	\$5,088.00
Tri-States Service Company-Boonville Ave.	Springfield	\$51,191.70
Yorkshire Cleaners	Marlborough	\$2,988.00

Total reimbursements as of March 31, 2016: \$2,861,804.65

DERT Fund Balance as of March 31, 2016: \$292,902.80

Recent Developments in Resource Recovery

The main goal of Missouri's Resource Recovery program is to encourage responsible recycling of hazardous waste, using the best available technology and procedures. A hazardous waste is any solid waste that is ignitable, corrosive, reactive (tendency to explode), toxic or listed as a hazardous waste in state regulations, which incorporate federal regulations. Most manufacturing, repairing and cleaning businesses, laboratories and retailers, chemical manufacturers, dry cleaners, auto repair shops, exterminators and lumber-treating facilities, produce some form of hazardous waste. Hazardous waste is often created when a product is used to the point it becomes dirty or contaminated. The facility can no longer use the contaminated or "spent" material in the way it was originally intended.

It is often possible to recover a usable product from spent material through various processing techniques such as distilling or filtering spent solvent to produce a clean solvent. The reclaimed material can then be reused by the facility or sold as a product to someone else. By recycling the contaminated material, the facility is conserving resources, saving money and protecting the environment.



A resource recovery unit that distills spent solvents from a paint manufacturing process. The spent/dirty solvent is collected in the tank on the left, distilled/purified in the distillation column in the middle and the clean solvent is collected in the tank on the right.

Although in general, recycling is a good thing, when dealing with hazardous wastes, extra measures must be taken for safety and health purposes. Missouri's Resource Recovery regulations, found in Code of State Regulations 10 CSR 25-9, are in place to ensure facilities are performing their resource recovery operations in a manner protective of human health and the environment. These are state-specific regulations and there are no corresponding federal regulations. After the department thoroughly reviews a facility's application, the department issues each facility a Resource Recovery certificate effective for two years, which is a type of formal approval that resembles a permit.



A distillation unit which recovers spent solvents. There is no secondary containment and it appears there has been a spill at some point. Any hazardous materials that may have been spilled would not only contaminate the work area, but could also seep through the concrete and contaminate the ground beneath.



The same distillation unit, after the area had been cleaned/decontaminated and secondary containment had been installed.

Missouri Resource Recovery Facilities

There are currently 23 certified resource recovery facilities in Missouri, 18 of which are actively processing waste. These facilities are divided into three classifications, as detailed in the table below:

Class	Definition	Number of Facilities
U	Recycling units that process more than one thousand kilograms (kg) of hazardous waste produced on-site only.	17
R1	Mobile recycling units that recycle hazardous waste to be reused at the same location where it was produced. It does not involve recycling hazardous waste to be reused at a different location.	1
R2	Recycling units processing wastes produced off-site as well as on-site.	5

Of these facilities, the department re-issued 12 certifications within the last two years. Six certifications are currently expired; however, the facilities are operating under extensions until some outstanding technical or regulatory issues can be resolved and the certifications can be re-issued. Five facilities have notified the department of their intention to close their resource recovery operations, and are in the process of closing their unit.

There are up to an additional 120 facilities performing resource recovery activities, that are considered exempt from the resource recovery regulations. These facilities are not required to obtain certification because they fall under one of the following exemptions, however they are still required to notify the department of their resource recovery activities.

- The facility performs precious metal recovery or manages used oil
 - The treatment process requires a Missouri Hazardous Waste Management Facility permit
 - The process qualifies for the closed loop exemption, as defined by EPA policy and the state and federal regulations
 - The facility produces and recycles its own hazardous waste, but processes less than 1,000 kg per calendar month

Recent Resource Recovery Options

In the past, any facility not qualifying for one of the above exemptions that was interested in resource recovery had to go through the process of buying the equipment, having it installed and obtaining a resource recovery certificate. For some facilities, this process may have seemed too difficult, or the amount of time, work and/or money required to obtain a certificate was not worth the expected return. New resource recovery options have recently surfaced in Missouri, which allow facilities to be able to have their waste recycled without the facility having to obtain a resource recovery certificate or buy and maintain equipment.

Note: The following examples are not intended as an endorsement or warranty by or from the department.

Mobile Unit

Liquid Recovery Inc. is a company based in Kentucky and has a mobile distillation unit. Liquid Recovery has been operating their mobile unit in other states and recently obtained a resource recovery certificate to operate in Missouri. An interested company would simply hire Liquid Recovery, who would bring the mobile unit to the company's facility and recover the spent materials. Recycled materials are left at the facility for reuse. Any hazardous wastes created from the process is left at the facility to be managed according to applicable state and federal regulations.



This mobile unit was able to process 286 gallons of solvent, of which 104 gallons of solvent was recovered as clean solvent. Only 182 gallons of still bottoms were required to be disposed.

Equipment Lease

A resource recovery certificate was recently issued to a facility leasing their distillation unit from another company. The leasing company has been doing business in other states for a while, but only recently started doing business in Missouri. The leasing company leases the distillation unit to the interested facility and trains the facility's staff on its operation. The leasing company charges the facility a certain fee per amount of clean solvent recovered. In this particular case, the leasing company acted as a consultant and helped the facility obtain their resource recovery certificate.

R2 Facilities

R2 facilities process their own waste, as well as waste from other off-site locations. Two such facilities are Tri-Rinse Inc. and the Doe Run Co. - Buick Resource Recycling Facility, LLC.

Tri-Rinse Inc. is a St. Louis company providing a variety of services to a diverse set of clients, ranging from small local companies to some of the largest EPA Superfund cleanups in the United States. Tri-Rinse accepts plastic and steel containers that once contained acute hazardous waste, ranging in size from one pint to 500 gallons, and offers numerous recycling and disposal options. Among other services, Tri-Rinse offers a Rinse and Return Program for small and large agricultural-chemical containers. When delivered to Tri-Rinse, these containers are inspected for damage and their manufacture date. Old and damaged containers are processed and recycled. Good containers are thoroughly cleaned inside and out and their parts replaced as needed. These containers are entered into their warehouse inventory and used when containers are needed for filling at manufacturing locations.

The Doe Run Co. - Buick Resource Recycling Facility LLC is a secondary lead smelter located in Boss. Buick accepts used or "spent" lead-acid batteries, along with other lead containing materials. The batteries and lead containing materials are run through a series of furnaces to reclaim the lead. While lead is the main goal of the reclamation process, sulfuric acid, plastic, and other metals are also reclaimed. The plastic is shipped to a plastic recycler where it is further processed for manufacture into new plastic products. The sulfuric acid can be used to make detergent grade sodium sulfate crystals or filtered and sold as product.

In order to obtain certification, R2 facilities must follow additional regulatory requirements, including the following items:

- Submit a sampling and analysis plan for incoming shipments to assure that the quality and type of wastes accepted are compatible with the successful operation of the facility

- Maintain a daily log which indicates the manifest number associated with each hazardous waste received and the immediate disposition of those wastes as part of its operating record
- Provide a closure plan and cost estimate for closing the resource recovery unit
- Provide financial assurance to cover the closure cost estimate

Upcoming Potential Changes

Definition of Solid Waste Final Rule

A new federal rule was promulgated effective July 13, 2015, which changed the definition of a solid waste. The final rule establishes a clear, uniform, legitimate recycling standard for all hazardous secondary materials recycling. EPA believes this rule will improve compliance and help ensure that hazardous secondary materials are legitimately recycled, rather than speculatively accumulated and/or illegally disposed. Missouri's resource recovery regulations are in some ways similar to certain elements of the definition of solid waste final rule. The department is currently evaluating how the new federal definition of solid waste final rule may impact Missouri's resource recovery program.

Improved Certification Process

In order to help encourage facilities to recycle their hazardous wastes, the department is always re-evaluating the resource recovery program to look for ways to improve the certification and recertification process, making it easier for everyone involved. Generally, this re-evaluation process includes an indepth evaluation of the 2015 EPA definition of solid waste regulations, Missouri's current resource recovery regulations, the current resource recovery application process and lessons learned from issuing certifications since the original resource recovery regulations were promulgated.

The department is committed to working with the hazardous waste recycling industry to provide for safe and effective hazardous waste recycling process. Reducing, reusing and recycling hazardous waste can protect human health and the environment, conserve our natural resources, reduce costs to businesses and reduce our reliance on raw materials and energy.

Dismantling the Minuteman II

The state of Missouri was host to 165 Minuteman II missile sites managed by Whiteman Air Force Base from 1964 until 1997. The Minuteman II sites were placed in 14 counties on land used previously for agricultural purposes. For landowners, life was expected to continue as normal around these sites, despite their purpose. Of the 165 sites, 150 were silos, each housing a Minuteman II missile; the remaining 15 sites were Launch Control Facilities. As a result of the Strategic Arms Reduction Treaty signed by former President George H.W. Bush and former Russian President Mikhail Gorbachev July 31, 1991, the USAF began deactivating the missile system. President Bush gave a direct order to take Minuteman II missiles off alert status in an effort to end the Cold War.

In Missouri, missile silos were demolished using explosives and upper portions were excavated. Next, remaining portions of the silos were filled with rubble and covered with engineered caps below the ground surface. Finally, surface areas were re-graded to drain water away from the cap location and were covered with gravel. At Launch Control Facilities, below grade structures filled with inert material and elevator shaft openings were sealed with concrete.



Constructing the launch control facility capsule.



On Dec. 8, 1993, Secretary of Defense William Perry, and then, Russian Minister of Defense Gen. Pavel Grachev, simultaneously pushed buttons on a detonator, ending the Minuteman II missile program.



The electronic equipment racks housed the guidance control and other specialized computers.

During the deactivation process, investigators discovered waterproofing materials used in the construction of silos and USTs contained toxic chemicals called PCBs. Investigators also found leaking petroleum USTs at some sites. Five years of groundwater sampling data confirmed the PCBs were not migrating into the groundwater. Petroleum contamination was also decreasing through a process called natural attenuation, in which microorganisms in the soil break down the chemicals into nontoxic substances.

Removal of the PCBs was determined to be technically and economically impracticable due to their location many feet below ground surface. As a result, USAF and EPA agreed to a plan of action leaving the contaminants in place and prohibited their disturbance through deed restrictions. at some sites.

At the completion of the closure process, each Minuteman II property was sold by the U.S. General Services Administration to adjacent landowners and other interested parties. One exception is the Oscar 1 Launch Control Facility, which is located on Whiteman Air Force Base and currently serves as a Minuteman II museum open to the public.

The department, EPA and USAF continue to work together under a long term stewardship (LTS) agreement signed by all three parties. The LTS agreement ensures property owners are educated and that deed restrictions remain in place to prevent exposure to PCB contamination at the former Minuteman II sites.



Missileers manned the launch control console. If officers received the call to fire their missiles, they would take out their launch keys from a locked box and authenticate the orders. Both officers would type special codes into the enable panel, insert their keys into the identical switches and turn the keys simultaneously. If the command to launch was verified by a second launch control center, a specified number of Minuteman II missiles would erupt out of their silos and head for predetermined targets, thousands of miles away.

**Cover Photo: Launch control blast door - missileers maintained a sense of humor in the face of the unthinkable.*

Regional Office Hazardous Waste Compliance Efforts

- Conducted 102 hazardous waste generator compliance inspections:
 - 32 at large quantity generators
 - 31 at small quantity generators
 - 23 at conditionally exempt small quantity generators
 - Four focused compliance inspections
 - Seven E-waste inspections
 - Two resource recovery inspections
 - Three compliance assistance visits at hazardous waste generators
- Issued 36 letters of warning and eight notices of violation requiring actions to correct violations cited during the 102 inspections conducted
- Received and investigated a total of 22 citizen concerns regarding hazardous waste issues

Underground Storage Tank (UST) Compliance and Technology Unit (CTU)

Tank inspection contract – During the reporting period, the tank inspection contractor conducted 118 inspections of active underground and aboveground storage tanks for the department and the Missouri Petroleum Storage Tank Insurance Fund (Fund).

Operator training – Operator training is now available online. Class A/B operator training and Class C operator training are both available, as well as a “test only” option. The draft rule is also available online, which includes a compliance deadline of July 1, 2016. The department and the fund will also be accepting reciprocity from some neighboring states. The training program and draft rule may be found on the fund’s Web page: optraining.pstif.org/intro/.

Federal rule changes – In 2011, EPA proposed significant changes to the UST regulations. The final version of those rules was published in July 2015 and became effective Oct. 13, 2015. Please note, these rules are not yet effective in Missouri; they will not be effective in Missouri until the department promulgates Missouri’s regulations. The intended filing date for Missouri’s proposed rules is Aug. 15, 2016, for a Sept. 15, 2016, publication date in the Missouri Register. A public hearing will be held at the Oct. 20, 2016, Hazardous Waste Management Commission meeting.

The rule includes new testing requirements for release detection equipment, overfill prevention equipment (e.g., flapper valves, ball float valves and alarms), spill buckets and containment sumps. Previously deferred airport fuel hydrant systems and field constructed tanks will now be regulated. Missouri must also include a new requirement for all new systems installed after July 1, 2017, to be double walled with enhanced leak monitoring. For updates and information on these upcoming rule changes, please visit our Web page: dnr.mo.gov/env/hwp/ustchanges.htm.

Tank inspections – State Fiscal Year 2016 contract inspections, as well as the department inspections continue. As seen in previous years, Missouri owners, operators and contractors continue to demonstrate their proactive compliance by being responsive to issues when found, demonstrating a willingness to be a partner in ensuring all Missouri USTs are in compliance. The department is maintaining compliance with the EPA requirement of inspecting all regulated facilities at least every three years. The department must also demonstrate all facilities are either in compliance or are moving to gain compliance. This goal is much easier to accomplish when owners, operators, contractors and regulators are all working together.

Missouri Department of Natural Resources - Hazardous Waste Program

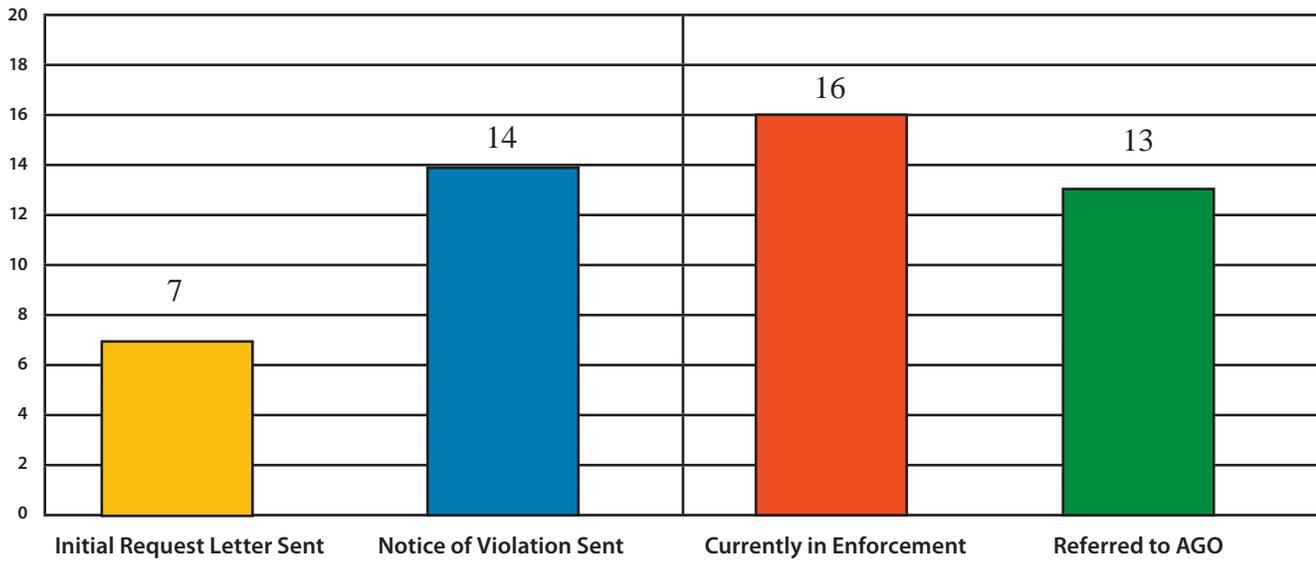
Financial Responsibility - Efforts continue to resolve violations with facilities not maintaining a financial responsibility mechanism to address releases and to protect third parties. Because of these efforts by the UST/CTU staff and the AGO, the number of facilities without a verified financial responsibility mechanism is less than one and a half percent.

Enforcement Efforts - In this time period, six cases were referred to AGO for enforcement action.

The following case was resolved:

Facility/Responsible Party	Summary of Violation	Resolution Summary and Compliance Status
Quiki - Three Convenience Store 3201 Prospect Kansas City, Mo	Failure to permanently close out-of-use USTs	Consent Judgment entered Feb. 25, 2016. USTs to be removed. Civil penalty of \$25, 750. Penalty suspended pending completion of removal and remediation.

Number of Facilities in Each Financial Responsibility Step



*This semi-monthly report is derived directly from a copy of the UST Database and provides a “snapshot” of the status for each active underground storage tank facility not covered by a proper Financial Responsibility Mechanism.

Underground Storage Tank Facilities with Unknown Financial Responsibility Status Report

Financial Responsibility Status	Number of Facilities
Initial Request Letter Sent	7
Notice of Violation Sent	14
Currently in Enforcement	16
Referred to Attorney General's Office	13
Total Number of Facilities with Unknown Financial Responsibility	50

Special Facilities Unit

Commercial facility inspectors - Special facilities inspectors conducted 12 inspections of commercial hazardous waste treatment, storage and disposal facilities (TSDFs).

PCB inspector - The inspector conducted 25 compliance inspections at various types of facilities throughout the state. The inspector's reports are forwarded to the U.S. EPA Region 7, which has authority for taking any necessary enforcement action regarding PCBs according to the Toxic Substances Control Act.

Hazardous waste transporters - More than 70 Hazardous Waste Transporter License compliance background checks were completed. In addition, staff updated Missouri's List of Licensed Hazardous Waste Transporters, along with the key to services. The list includes transporters licensed to haul hazardous waste, infectious waste and used oil in Missouri and it can be accessed at dnr.mo.gov/env/hwp/transporters.php.

Hazardous Waste Enforcement Unit

Enforcement Efforts

- Resolved two hazardous waste enforcement cases
- Received six new enforcement cases

Thomas Bedell

Mr. Thomas Bedell operated an electronics scrap recycling business out of his home at 5020 Bagnall Drive and rented storage units at 5213 Business 50 W in Jefferson City, Mo. The department conducted an inspection at 5020 Bagnall Drive on June 11, 2013. It was determined Federal Recycling gave Mr. Bedell at least 198 cathode ray tubes (CRTs) and paid him for the scrap metals recovered. Mr. Bedell stripped the CRTs of valuable scrap metals and illegally disposed of the CRT glass in scrap automobiles. The department issued two notices of violation to Mr. Bedell on July 17, 2013. He had returned to compliance by Nov. 22, 2013. Mr. Bedell agreed to amicably resolve all claims the department might

bring against him by signing an Administrative Order on Consent (AOC). The penalty amount of \$8,000.00 is suspended for three years contingent upon Mr. Bedell having no cathode ray tube recycling activities during the three years following the last signed date on the AOC.

Pesticide Collection Activities

Commercial Pesticide Applicator Training - During January, program staff participated in the commercial pesticide applicator certification and re-certification training classes throughout Missouri. The topic presented by the program was “pesticide waste disposal and dealing with pesticide spills.” A total of 1,950 applicators attended one of the training days in Springfield, Kansas City, Columbia, Cape Girardeau or St. Louis.



Solid Waste Forum - The program presented at the Solid Waste Forum in February. Staff provided information about the program along with how the program can legally accept waste pesticide from farmers. The farmer definition in Missouri’s hazardous waste regulation and exemption in our hazardous waste law was included to give the solid waste district managers a better understanding of the dual household hazardous waste and farmer waste exemption in hazardous waste law.

Missouri Resources - The program was featured in an article titled “Picking Up Pesky Poisons” in the Winter 2016 Missouri Resources. The article summarized the details of the program and how convenient it is for farmers and households to dispose of waste pesticide. The article contained several photographs from the pesticide collection in Kirksville in 2015.

Pesticide Collection Events - The program conducted two pesticide collection events in March. The first event was on March 12 at the Fisher Delta Research Center in Portageville yielding 32,659 pounds of waste pesticide from 22 participants. The second event was on March 26 at Baker Implement Company in Poplar Bluff yielding 17,674 pounds of waste pesticide from 28 participants. Four additional collections will follow in the next quarter.

New for 2016, the program offered to collect triple-rinsed, plastic pesticide containers along-side the pesticide collections. The collection of these empty containers was advertised for the first two events but has since been canceled due to the lack of containers collected. The program will still accept these containers for the remaining collections, but will no longer advertise the service unless the need is apparent.

Tanks Attends the Annual Petroleum and Convenience Store Association Exposition

Staff from the Hazardous Waste Program's Tanks Section recently attended the Petroleum & Convenience-Store Exposition of Mid-America (PACE) held at the Kansas City Convention Center, Bartle Hall on Feb. 19-20, 2016. PACE is the premier Midwest tradeshow with more than 4,000 attendees from the four state area of Missouri, Kansas, Iowa and Nebraska and attracts many key industry leaders. It featured the latest in petroleum and convenience store products, tank system equipment, hardware, soft goods, technology and the hottest new trends and services.

Staff had a chance to meet and inform members of the industry in an informal setting. Materials displayed included the Missouri Resources magazine, a variety of the department technical bulletins on UST management and other UST publications. The department answered questions, discussed policies and provided outreach on the proposed updates to the UST regulations.

Chris Veit from the Closure, Release and Investigations Unit and Heather Peters, Compliance and Enforcement Section Petroleum Storage Tank Enforcement Unit staffed the booth. Several members of the Tanks' Section, the Compliance and Enforcement Section and the Tanks Section Chief also attended the exposition.

Tanks Section Planning Workshop at the Missouri Waste Control Coalition Conference

The Hazardous Waste Program's Tanks Section is participating on the Missouri Waste Control Coalition (MWCC) to plan the 2016 MWCC Conference at the Tan-Tar-A Resort in the Lake of the Ozarks on July 10 through July 12, 2016. The Tanks Section will also be holding a tanks workshop as part of the conference. This will be the eighth annual workshop in conjunction with the MWCC events. This workshop is targeted toward environmental consultants who provide services to tank owners and operators. The workshop will provide consultants with information and training regarding free product recovery, proposed federal rulemaking on underground storage tanks, plume stability analysis issues and other remediation topics.

The workshop will include departmental staff, along with private consultants, private laboratories and others.

Missouri Department of Natural Resources - Hazardous Waste Program

TANKS

Petroleum Storage Tanks Regulation December 2015

Staff Productivity	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	TOTAL
Documents received for review	197	213	220	206	164	184	195	189	221	0	0	0	1,789
Remediation documents processed	153	146	151	156	97	210	150	137	217	0	0	0	1,417
Closure reports processed	16	7	15	17	11	13	22	8	11	0	0	0	120
Closure notices approved	12	13	14	12	7	7	7	9	12	0	0	0	93
Tank installation notices received	6	6	10	5	0	10	5	6	7	0	0	0	55
New site registrations	7	3	9	3	9	5	5	1	1	0	0	0	43
Facility Data	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	TOTAL
Total in use, out of use and closed USTs	40,929	40,950	40,963	40,971	41,003	41,022	41,042	41,064	41,084	0	0	0	
Total permanently closed USTs	31,970	31,979	32,014	32,040	32,061	32,084	32,134	32,150	32,179	0	0	0	
In use and out of use USTs	8,955	8,967	8,945	8,927	8,938	8,934	8,903	8,909	8,900	0	0	0	
Out of use USTs	664	668	681	685	681	680	664	659	654	0	0	0	
Total hazardous substance USTs	403	403	405	405	405	405	405	405	405	0	0	0	
Facilities with in use and out of use USTs	3,441	3,444	3,441	3,438	3,440	3,438	3,426	3,428	3,422	0	0	0	
Facilities with one or more tank in use	3,209	3,210	3,203	3,199	3,203	3,201	3,194	3,197	3,191	0	0	0	

Closures

Underground Storage Tanks	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	TOTAL	All Yrs
Closure Reports Reviewed	16	7	15	17	11	13	22	8	11	0	0	0	120	
Closure Notices Approved	12	13	14	12	7	7	7	9	12	0	0	0	93	
Number of Tanks Closed (Closure NFA)	32	23	38	22	20	45	44	33	53	0	0	0	310	

Cleanup

Underground Storage Tanks													TOTAL	All Yrs
UST release files opened this month	6	9	10	6	6	8	7	9	12	0	0	0	73	6,764
UST cleanups completed this month	9	6	13	7	6	14	9	14	19	0	0	0	97	5,947
Ongoing UST cleanups	831	833	833	833	833	827	826	824	816	0	0	0		
Aboveground Storage Tanks														
AST release files opened this month	0	0	0	1	2	4	3	1	1	0	0	0	12	486
AST cleanups completed this month	2	0	1	1	0	0	1	0	1	0	0	0	6	304
Ongoing AST cleanups	175	175	174	174	176	179	181	182	182	0	0	0		
Both UST and AST														
Total release files-both UST & AST	0	0	0	0	0	0	0	0	0	0	0	0	0	80
Cleanups completed-both UST & AST	0	0	0	0	0	0	0	0	2	0	0	0	2	54
Ongoing cleanups-both UST & AST	27	27	27	27	27	28	28	28	26	0	0	0		
Unknown Source														
Total release files-unknown source	1	0	0	2	0	0	1	0	1	0	0	0	5	229
Cleanups completed-unknown source	1	0	0	1	1	0	1	0	0	0	0	0	4	213
Ongoing cleanups-unknown source	18	18	17	18	17	17	17	15	16	0	0	0		
Documents Processed	153	146	151	156	97	210	150	137	217	0	0	0	1,417	
*Reopened Remediation Cases	0	0	0	0	0	2	0	0	0	0	0	0	2	82

* Reopened Remediation Cases was added Nov. 18, 2009 - the cumulative total has been queried and a running total will be tracked/reported with the FY 2010 Tanks Section Monthly Reports.

Effective December 2008 tanks with unknown substance will be included in total figures. Some measures are re-calculated each month for all previous months to reflect items added or edited after the end of the previous reporting period.