

CAUTION
HAZARDOUS WASTE
SATELLITE
ACCUMULATION AREA



2018

Annual Report

Status of the Hazardous Waste Program in Colorado

February 5, 2019



COLORADO

**Hazardous Materials
& Waste Management Division**

Department of Public Health & Environment

Executive Summary

The Hazardous Waste Program at the Colorado Department of Public Health and Environment spent a great deal of FY18 implementing new regulations from the U.S. Environmental Protection Agency. 80 amendments to the Colorado Hazardous Waste Regulations went into effect this year as a result of new federal regulations. The amendments are intended to facilitate compliance with the regulations and to strengthen environmental protections.

Another major initiative this year was increasing the number of healthcare facilities in the hazardous waste self-certification program to over 400. This program requires facilities to do an audit on their waste management and report the results to the state. Due to the success of the program in other industries the healthcare sector was expanded this year to ensure waste pharmaceuticals are being handled properly.

Inspections more than doubled this year, due largely to increases in staffing to ensure an adequate inspector to facility ratio. We also expanded our hazardous waste regulation trainings, reaching more than 600 people across the state. Many of these individuals are trainers at their own organizations and will pass on the knowledge gained at our course to hundreds more.

Staff have worked extremely hard over the last year to uphold the division’s mission “to improve the quality of the environment and public health for the citizens of Colorado by continuously improving our efforts to ensure proper management of hazardous materials and waste.” The following report details the achievements of the Hazardous Waste Program over the past year.



Eleven of the 21 Hazardous Waste Program staff members are pictured above with the division director.

217 facilities were inspected this year	80 amendments to the Colorado Hazardous Waste Regulations went into effect to be in compliance with new federal regulations.	172 sites are protected under environmental covenants
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Hazardous Waste Program Background

Colorado’s Hazardous Waste Program is responsible for ensuring compliance with laws and regulations pertaining to the management of hazardous waste. The authority for this program is in the Colorado Hazardous Waste Act, 25-15-101 et seq., C.R.S., and the federal Resource Conservation and Recovery Act (RCRA). The U.S. Environmental Protection Agency (EPA) has authorized Colorado to implement the federal program requirements, and by doing so, the authority to implement requirements for the management of hazardous waste in Colorado rests primarily with the state. EPA authorized Colorado for the base hazardous waste regulatory program in November 1984. In July 1989, federal authorization was granted to Colorado for significant additions to the base program, including authority for hazardous waste corrective action, which provided authority to investigate and clean up releases of hazardous waste constituents into the soil, surface water or groundwater at hazardous waste facilities.

Primary elements of the Hazardous Waste Program include compliance assistance, compliance monitoring and enforcement, corrective action, and permitting. Each of these program elements is discussed in the following sections. In addition, this report includes sections discussing ongoing program authorization by EPA and the status of program funding.

As of December 2018, the Hazardous Waste Program regulates seven active and permitted treatment, storage and/or disposal facilities (TSDs) and 15 closed TSDs with hazardous waste remaining buried on-site that need post-closure monitoring and/or maintenance. In addition, the program regulates about 153 large-quantity generators, about 430 small-quantity generators, about 79 transporters and more than 3,900 very small quantity generators of hazardous waste. The program also regulates about 200 facilities at which corrective action (remediation of environmental contamination) is required.

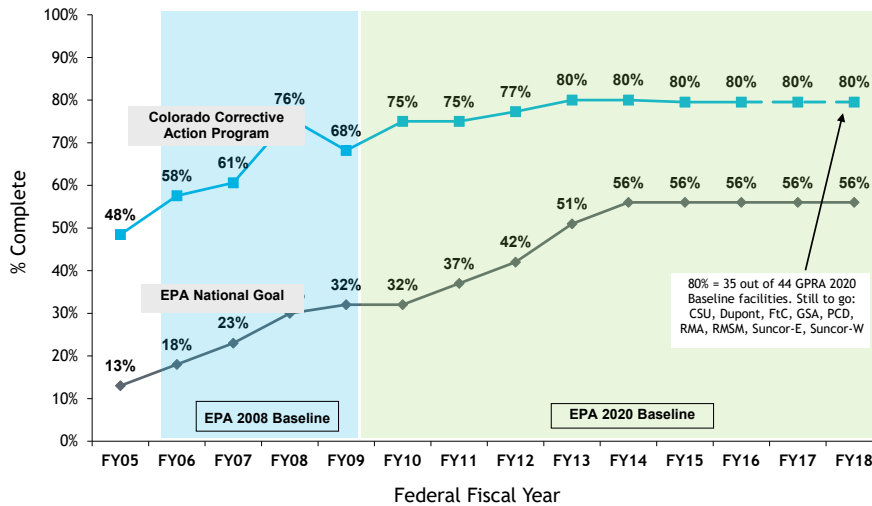
Maintaining Authorization

One of the key values held by the regulated community, and one of the legislative directives from SB 00-177, is that Colorado “maintains program authorization by the federal government.” When the EPA authorizes a state for the hazardous waste program, it carefully reviews two aspects of the state program: 1) the state’s statutory authorities, funding and staffing, both quantitatively and qualitatively; and 2) the state’s regulations. Once the state is authorized, EPA monitors the state program to ensure it is being implemented in a manner that satisfies federal program requirements.

To measure corrective action effectiveness, the EPA has established four national environmental indicators since 1999. These indicators measure the hazardous waste corrective action program’s progress on risk containment at contaminated facilities. This approach measures “Human Exposures Under Control,” “Ground Water Releases Under Control,” “Remedy Construction” and “Corrective Action Completeness” at a defined group of high-priority facilities around the country.

Colorado currently has 44 of these high-priority facilities. The EPA established a national goal for each measurement in federal fiscal year 2006 and updated these goals in federal fiscal year 2009. Figures 1 and 2 show Colorado’s progress on remedy construction and corrective action completeness. We have had human exposures and ground water releases under control at all 44 sites for the past several years and are well ahead of the EPA national goals for all four indicators.

Figure 1 Remedy Constructed - CA550

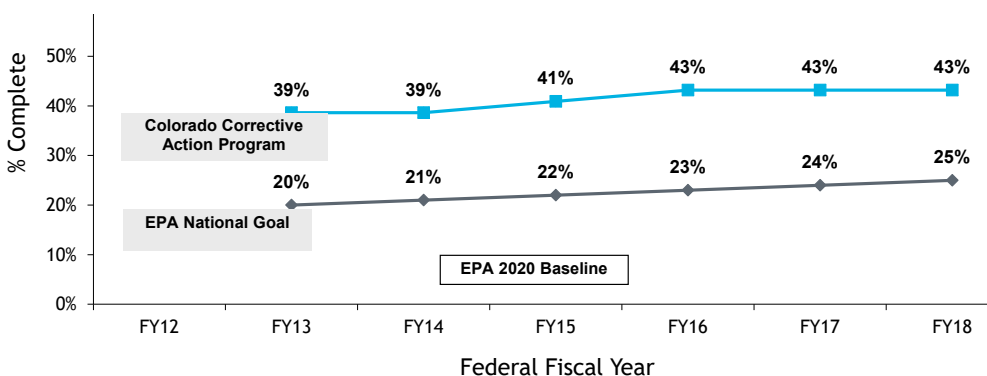


Colorado is still working to construct remedies at 20 percent of facilities under corrective action. With 80 percent of remedies already constructed, however, we are far exceeding EPA’s goal of 56 percent.

For the last several years the EPA has rated all aspects of Colorado’s program very highly in its annual review.

Human exposures have been under control at all sites in Colorado since federal fiscal year 2013, exceeding the EPA National Goal of 87 percent of sites having human exposures under control. In addition, 100 percent of ground water releases have been under control at the 44 high-priority facilities in Colorado under corrective action since federal fiscal year 2015.

Figure 2 Corrective Action Complete - CA900/999



The Hazardous Waste Program also continues to be a leading contributor to national efforts to streamline the corrective action process through active participation in the Interstate Technology and Regulatory Cooperation Work Group (ITRC). State regulators lead this national organization to streamline regulatory approval processes for applying innovative technologies to environmental cleanup.

Inspections

Facility inspections are one tool the program uses to bring all hazardous waste facilities into compliance with state laws. In 2018, 217 inspections were completed across all facility types. 18 inspections were for Large Quantity Generators, 48 inspections were at Small Quantity Generators and 107 were at Very Small Quantity Generators.

Statute requires that all federal and state TSDs are inspected every year, as well as active land disposal facilities. In addition, 20 percent of large quantity generators are inspected and other categories as scheduled. These requirements were met in 2018. On average, each full time inspector was able to complete roughly 20 inspections per quarter. This inspector efficiency level is one of the highest since 2009 and can be explained by the onboarding of a new inspector in 2018.

Inspections also carry administrative responsibilities, such as report preparation, tracking return-to-compliance activities at the facility and data entry. In 2018 these administrative tasks were performed on time by all inspectors. Inspections also result in the issuance of formal and informal enforcement actions. 100 percent of both formal enforcement actions (compliance orders) and informal actions (compliance advisories) were timely in 2018, as measured against standards established by EPA and adopted by the Colorado program. All inspection reports become public documents and are available to anyone through our online environmental records at www.colorado.gov/cdphe/hmwmd-records-review.

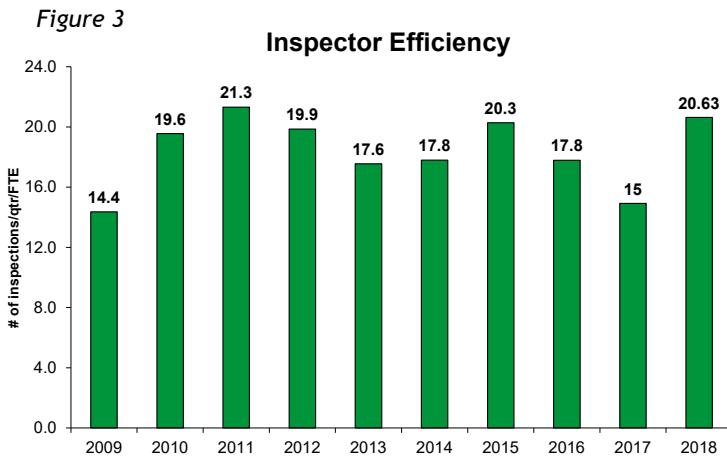
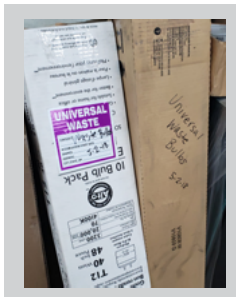


Figure 3 shows the average number of inspections performed by each inspector per calendar quarter. The performance plans for each inspector define the number of completed inspections needed to achieve an outstanding, satisfactory or unsatisfactory performance rating. To perform at a sustainable level, experienced inspectors should be expected to conduct 15 inspections per calendar quarter and 18 per quarter for an outstanding rating in this aspect of their job duties. This standard prevents staff burn-out, but also allows the program to adequately inspect the regulated universe. Inspections per full-time employee were higher this year due to a more balanced workload.

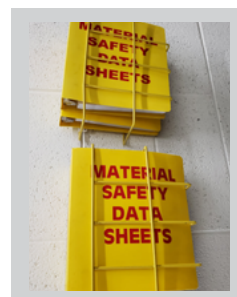
Common violations seen on inspections:



Failure to label containers with accumulation start dates, or accumulating for longer than one year.



Containers in disrepair or too close together, causing inadequate aisle space.



Lack of training or training documentation for employees handling hazardous waste.

Generator Improvement Rule

In 2018, Colorado amended the Colorado Hazardous Waste Regulations (6 CCR 1007-3) to correspond to the EPA Generator Improvements Rule which was published in the Federal Register on November 28, 2016 and which became effective on May 30, 2017. The primary intent of the amendments was to foster improved compliance by hazardous waste generators in the identification and

management of the hazardous waste they generate, thus improving protection of human health and the environment. The revisions included reorganizing the hazardous waste generator regulations to make them more user-friendly and to improve their usability by the regulated community. The amendments were also intended to address gaps in the existing regulations to strengthen protection to

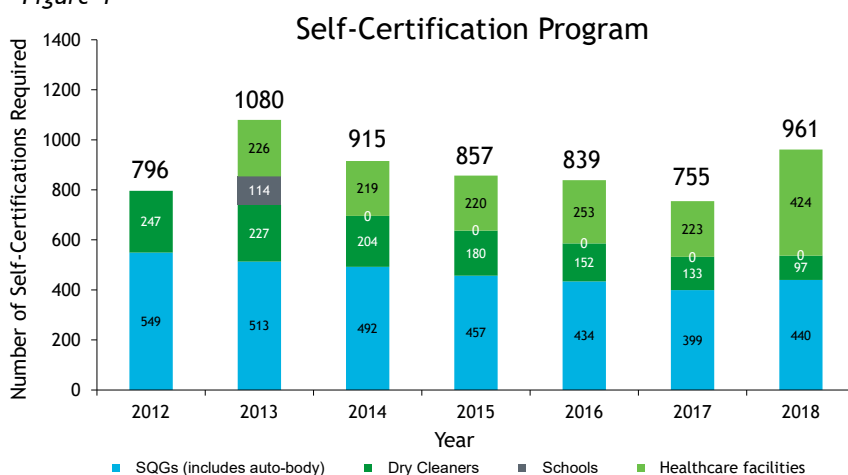
environment and to provide some flexibility for hazardous waste generators to manage their hazardous waste in a cost-effective and protective manner. Colorado was required to adopt all changes from the new rule that were more stringent than existing state regulations. The resulting changes amounted to over 80 amendments to the Colorado Hazardous Waste Regulations. Colorado adopted these changes on May 15, 2018 and they became effective on June 30, 2018. At that time, Colorado hazardous waste inspectors were required to conduct inspections for compliance with the new regulations and industry was expected to be in compliance with the new requirements.

Since July of 2018 we have initiated extensive outreach related to the amendments, including website postings and references to EPA links. All hazardous waste guidance documents are currently under revision to incorporate the new generator improvement rule changes and revised guidance documents are expected to be posted by spring of 2019. In addition, Colorado annually offers statewide hazardous waste training to industry. In October of 2018, statewide all-day training sessions were presented at five separate locations throughout the state. The focus of the 2018 training was to help industry understand the changes in the amended regulations. Over 600 industry professionals attended the training statewide. The feedback from industry has indicated the statewide training was well received and appreciated.

Self Certification

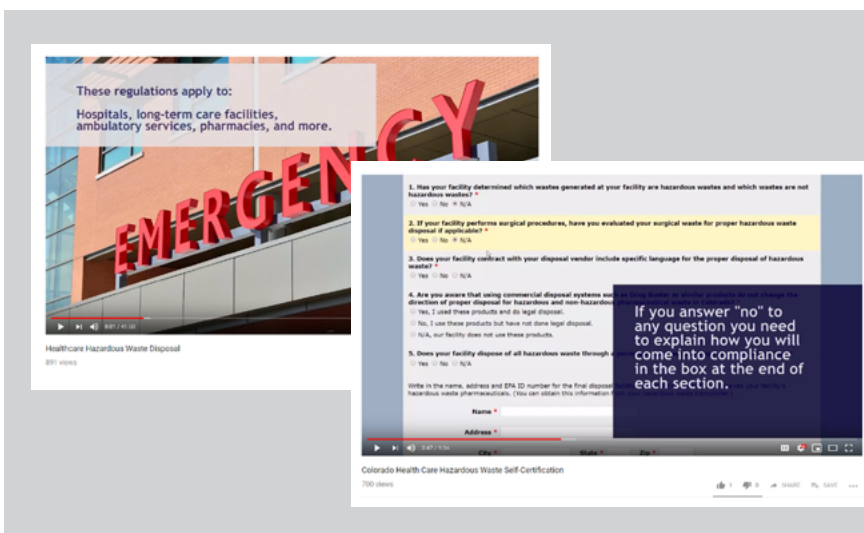
The self certification program was created in 2005 to allow dry cleaning facilities to audit their own waste management, submitting annual checklists as documentation to the division. After launching the program the division quickly saw a decrease in violations and expanded the program to include Small Quantity Generator facilities in 2006 and long term care facilities in 2013. Similar improvements resulted once self certification was rolled out to these facilities as well, likely because the self certification checklist walks the facility through a typical inspection and provides additional waste management guidance.

Figure 4



Due to this continued success, in 2018 the self certification program was expanded to include all hospitals and all ambulatory surgery centers in the state. With this expansion, 961 facilities were in the self-certification program this year. This includes 424 healthcare facilities located throughout Colorado, allowing us to ensure that waste pharmaceuticals generated by these facilities are properly managed and dispositioned.

As Figure 4 shows, the number of dry cleaners in the self certification program has decreased over the years as facilities switch from perchloroethylene to alternative chemicals that do not create hazardous waste.



We created two training videos to offer compliance assistance to healthcare facilities new to self certification this year.

The first video provided an in-depth discussion of how the Colorado Hazardous Waste Regulations apply to healthcare facilities and the second showed facilities exactly how to fill out the self-certification form. These videos had more than 1,600 views at the time of this report and online hazardous waste checklists had 3,850 hits.

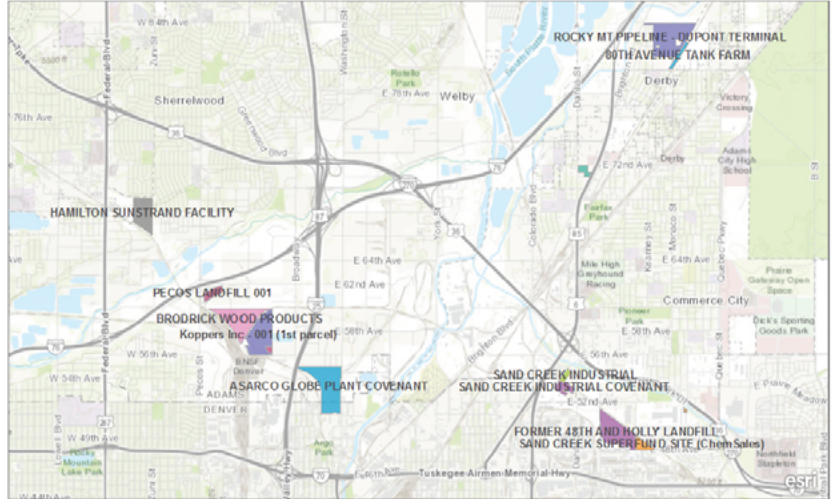
Corrective Action

Corrective action, which is the environmental remediation and clean-up portion of the Hazardous Waste Program, continues to be a substantial part of the program's workload. Corrective action staff oversee the remediation and cleanup of more than 200 individual facilities ranging in size from large facilities such as Fort Carson and Lockheed-Martin to very small facilities like neighborhood dry cleaners and plating shops.

The program uses Corrective Action Plans (CAPs) to initiate corrective action at facilities where it is needed without the need for extensive enforcement. Though voluntary, this is a popular mechanism among industries, and an alternative to the resource-intensive options of a hazardous waste permit or compliance order. This year, reviewing a simple CAP took staff 6.5 hours over 30 days to complete, compared to 3.2 hours last year. This is still well below the target of 10 hours across 30 days set in 2007.

A complex CAP, on the other hand, was processed by staff in approximately 8.8 hours over 30 days in 2018. This was an increase from 2017 but still well below the division's goal of 40 hours across 60 days.

CDPHE Colorado Institutional Controls map

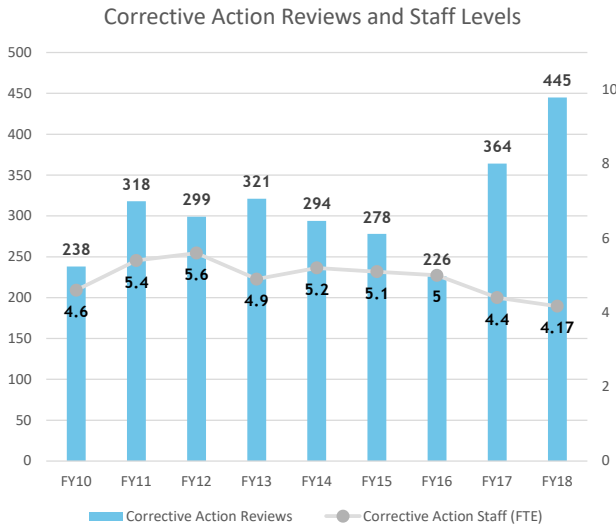


Example of properties under environmental covenants.

Environmental Covenants: Senate Bill 01-145 created environmental covenants, which provide a mechanism for property owners to establish certain restrictions or conditions for their properties, and for those restrictions or conditions to be enforceable by the Colorado Department of Public Health and Environment. We can now approve long-term clean-up plans that rely on environmental covenants to manage risks associated with residual contamination, thereby avoiding the difficulty and expense of remediating sites down to unrestricted-use levels. To date, accomplishments include:

- A registry of sites has been created as required by the statute. Currently, there are 172 sites on the registry, one-third of which are hazardous waste sites. Several others are in process and will be added soon.
- The Colorado Attorney General's Office has developed model covenant language.
- Our geographic information system (GIS)-based map web page has been implemented; the sites with covenants have been included, with a link to the actual covenant document. This tool allows the public to have access to the information, as the map above shows.
- After meeting with several local governments to discuss communication and implementation issues, we created a guidance document on what covenants are, the opportunities they offer, what is needed to create a covenant, and the tracking and notification responsibilities of the state and local governments.
- Program staff and staff from the Attorney General's Office (AGO) have developed a policy describing when the covenant should be finalized within the clean-up process so that remedies cannot be compromised through subsequent property transactions.
- The ArcGIS maps showing properties under environmental covenants provide an excellent way to partner across state agencies. For example, when the State Engineer of Division of Water Resources receives a permit for a new well, the office cross-references the site with the environmental covenant map to make sure the well will be protective of human health and the environment. The Colorado Oil and Gas Conservation Commission has also made use of the interactive environmental covenant maps.

Figure 5



The program continued to have high numbers of corrective action reviews to complete this year. Staff were able to complete 106 reviews per full time employee in FY18, compared to 83.7 reviews per employee in FY17. The increase in documents is due to sites where frequent monitoring documents must be reviewed. Though numerous, these documents are not time intensive.

- In 2008, via passage of SB08-037, the environmental use restriction was added to the statute as a second mechanism to ensure long-term control of residual risks. Federal facilities throughout Colorado were unwilling to enter into environmental covenants because the federal government feared the covenants represented interest in real property. Rather than litigate the issue, Colorado worked with the federal entities to develop the environmental use restriction as a mechanism that federal entities could agree to, thereby accomplishing long-term control of contaminated sites equivalent to that afforded by environmental covenants.

Permitting

Facilities that manage hazardous waste in a manner that requires permitting by the Colorado Hazardous Waste Program are referred to as treatment, storage or disposal facilities (TSDs). There are currently 22 of these facilities in Colorado – seven are active and required to have an operating permit and the remaining 15 require a post-closure permit or equivalent enforceable document. Colorado has operating permits in place for all seven of operating facilities and for 49 of the 50 individual units on those facilities. The only unpermitted unit is at the Pueblo Chemical Depot, which includes 94 chemical weapons storage igloos (considered a single “unit”). We do not plan to permit these igloos, but rather to regulate them under a compliance order until they are emptied and closed by the Army under its Chemical Demilitarization Program no later than 2023.

The other 15 TSD facilities in Colorado are no longer actively managing hazardous waste, but have left waste or contamination in the ground. These facilities require post-closure care or monitoring controls. As of FY 2018, Colorado has post-closure controls in place at all of the units at these facilities.

The division also issues emergency permits to entities that want to treat any potentially reactive hazardous wastes. This ensures that the disposal method is safe for each specific type of reactive hazardous waste. Common reactive wastes that require an emergency permit are fireworks, ammunition, and unstable chemicals. The division works closely with local health departments, police departments and bomb squads who frequently need to dispose of these reactive wastes. In calendar year 2018 we issued 35 emergency detonation permits across the state.

In 2018, the permitting unit reviewed and/or approved 69 permit modifications for the Pueblo Chemical Agent-Destruction Pilot Plant, as well as approximately 15 modifications for the Pueblo Chemical Depot permit. Permitting staff have also conducted inspections for several permitted TSDs and have issued Compliance Advisories and Inspection Reports associated with these efforts.



The Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) is one of Colorado’s permitted facilities. The plant was taken off-line in September 2017 to fix numerous equipment failures and to troubleshoot both system and safety problems. The plant was restarted in June 2018, and has gradually increased chemical weapons throughput achieving the number required to commence the Integrated Facility Demonstration (IFD). The IFD is required to generate data that is fed into the Multiple Pathway Health Risk Assessment to determine parameters for the operating permit. PCAPP is motivated to apply for a hazardous waste operating permit in FFY 2019, and to achieve chemical weapons stockpile destruction completion by 2023. To accomplish this, the permittees are developing a permitting strategy to construct and operate three Static Detonation Chambers to destroy the entire 4.2” mortar round campaign (~80,000 weapons). Two Immobilized Cell Bioreactors (ICBs) formally intended to be backup to the primary two ICBs are being brought online to act as storage for hydrolysate being generated from increased plant processing activity. The ICBs use microbes to biodegrade hydrolysate - neutralized mustard agent. The bioreactors have proven to be a highly effective and efficient technology for degrading hydrolysate leaving only water (recycled through the plant) and salt cake (appropriate for hazardous waste landfill disposal). 86,992 weapons have been destroyed as of Dec 7, 2018.

Compliance Assistance

A goal of the Hazardous Waste Program is for all regulated facilities to be in compliance with state laws and regulations. The traditional inspection and enforcement program is one way to reach that goal. Compliance assistance, however, is another important method for obtaining and maintaining compliance. The General Assembly recognized the value and importance of compliance assistance as one of the expectations set out in SB 00-177, Section 25-15-301.5(2)(g), C.R.S., is for the department to “establish a preference for compliance assistance with at least 10 percent of the annual budget amount being allocated to compliance assistance efforts.” In FY 2018, the program met that requirement with 15.5 percent of staff time devoted to compliance assistance.

Program inspectors incorporate compliance assistance and pollution prevention into compliance inspections when appropriate. Inspectors provided guidance documents and person-to-person consultation on 140 of the 217 inspections performed this year. No site visits were requested this year under the Generator Assistance Program, where a free site visit is offered to help facilities come into or stay in compliance with Colorado’s hazardous waste requirements.

By the numbers:



65% of inspections offered compliance assistance.



Our Customer Technical Assistance line responded to **774 calls** and **119 emails** in 2018.



53,904 web hits for Hazardous Waste Program pages on the division website.



6,319 web hits for information about residential electronics and computer waste.



4,974 web hits for medical and pharmaceutical waste guidance.



3,789 web hits for hazardous waste management guidance and policy.



Hazardous Waste Regulations Training

Hazardous Waste Program staff presented trainings on the Colorado Hazardous Waste Regulations in Grand Junction, Denver, Westminster, Colorado Springs and Fort Collins this year, reaching over 675 people. The new generator rules from the EPA were discussed in detail.



Our program also assists schools with their chemical inventories. We help organize inventories and advise schools on which chemicals are defined by state law as Hazardous Wastes and which chemicals can be disposed of safely. We also assist with old chemicals and arrange for chemicals that are extremely reactive and potential explosives to be disposed. We work closely with the Sustainability Unit to assist schools in the proper management and training of their chemical inventory.



Program Funding

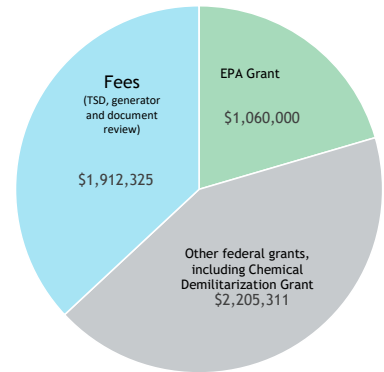
Funding for the Colorado Hazardous Waste Program comes from federal grants, cash fees and an annual Chemical Demilitarization Grant. The program receives no Colorado General Fund money. Currently, without considering federal funding for the Chemical Demilitarization Project, fee revenues fund about 64 percent of program costs and the EPA grant covers the remaining 36 percent.

Because the EPA grant has remained essentially flat for more than 15 years, the fees have had to be increased several times to cover increasing program costs. Since the passage of SB00-177, the Colorado Solid and Hazardous Waste Commission has increased the fees three times – in February 2003, May 2006 and again in May 2009. The fees also have been decreased twice – in 2011 and 2012. At the beginning of state FY 2015, with the exception of one fee type, the decreased fees were moved back to the fee levels established in 2009.

Figure 7 tracks the revenue, expenditures and fund balance for the Hazardous Waste Program. The key data lines on Figure 7 are the total revenue (forest green line near the top), total expenses (top red line) and the cash balance (dark blue line) in the Hazardous Waste Service Fund. Figure 7 shows that, if our projections are correct, the fee level is projected to be adequate for at least two more years.

It is important to note that personnel costs are the largest single expense item for the program. Therefore, managing staffing levels is an important part of managing the program budget. As the Hazardous Waste Program evolves, staffing continues to be adjusted through attrition. We will continue to manage our staffing, resulting in significant monetary savings.

Figure 6 Program Funding (Approximate)



Program Expenditures (Percent)

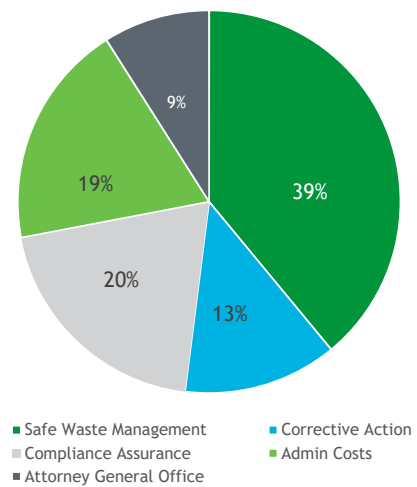
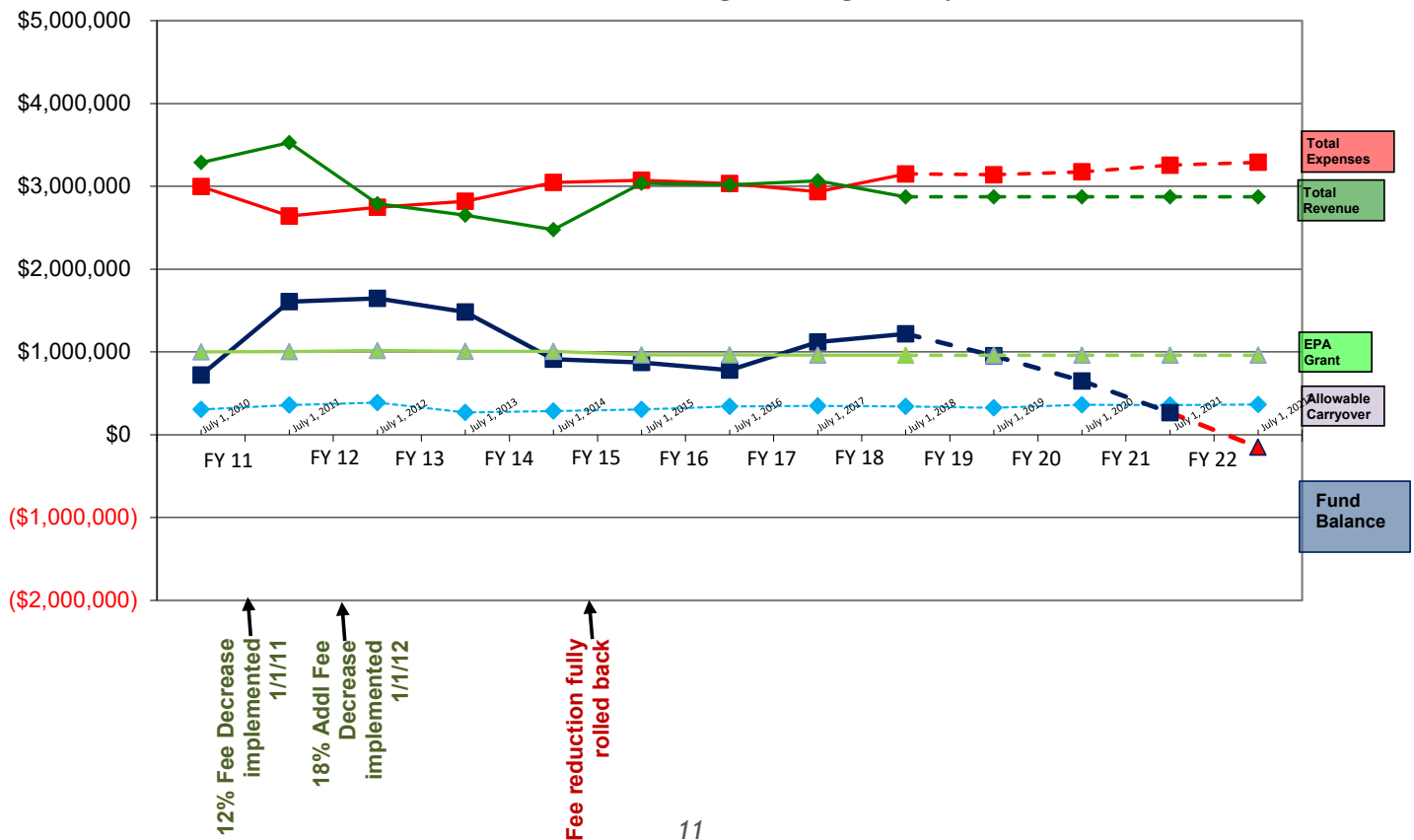


Figure 7

FY2018 Hazardous Waste Program Budget Analysis



Conclusion

As discussed in this report, the division has implemented and maintained significant improvements to the Hazardous Waste Program to satisfy the expectations set out by SB 00-177 (Section 25-15-301.5, C.R.S).

Key accomplishments include:

- Maintaining program authorization by the federal government (EPA);
- Maintaining a program that is credible and accountable;
- Maintaining a program that is innovative and cost-effective;
- More than doubling our inspections in FY2018 compared to FY2017;
- Adding over 80 amendments to the Colorado Hazardous Waste Regulations to be in compliance with new EPA regulations;
- Training over 600 people across the state on Colorado's Hazardous Waste Regulations;
- Emphasizing compliance-assistance efforts.

Efforts undertaken by the Hazardous Waste Program have significantly improved both the efficiency and effectiveness of the program. Major program accomplishments include continuing emphasis on innovative compliance assistance projects; maintaining high inspection efficiency and corrective action efficiency; maintaining high timeliness of enforcement actions; and exceeding national goals set by the U.S. Environmental Protection Agency for corrective action, permitting, inspections and enforcement.



COLORADO
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