



Colorado Department
of Public Health
and Environment

Colorado Solid Waste and Materials Management Program 2012 Annual Report to the Colorado General Assembly



A Message from Charles Johnson

Program Manager, Solid Waste and Materials Management

Gov. John Hickenlooper has required all of the state's departments to be elegant, efficient and effective. Toward this end, Dr. Christopher Urbina, the Colorado Department of Public Health and Environment's executive director, has implemented a plan integrating a program of "Lean" strategies to achieve the governor's goals. The Hazardous Materials and Waste Management Division (the division) and its associated programs have a long and rich tradition of contiguous improvement, and are now implementing Lean activities to continue our improvement efforts.

The Solid Waste and Materials Management Program (the program), has implemented efforts to gain efficiencies in our work through the years. This effort is evidenced by: 1) revising and updating outdated regulations, such as the waste impoundment and compost regulations, to accommodate current industry practices while still protecting human health and the environment, 2) developing guidance and training to assist industry with permits and plans, 3) developing guidance for the implementation of innovative technologies such as the use of water-balance landfill covers that will cost less to construct and maintain while being more sustainable, 4) striving to improve our working relationships with owners, operators, consultants and other interested parties and 5) endeavoring to improve communications with all of the above.

In keeping with the governor's and our executive director's direction, the program has launched additional efforts to streamline our processes and improve partnering with our customers. These new ef-

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orts include, but are not limited, to the following: developing an inspection checklist to help focus and expedite inspections and follow-up communications and developing a permitting checklist to help streamline our permit application reviews and facilitate facility representatives in developing their application and modification requests. These checklists will be vetted through a public stakeholder process starting next year. We also are seeking to perform a critical evaluation of the solid waste permit application and review process. We hope this effort will include both internal and external stakeholders during various parts of the review and streamlining process.

We look forward to working with our partners on both our compliance assurance and permitting processes to save time, increase efficiencies, improve and clarify our communications and build stronger partnering relationships.



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Impacts and Success Stories

Permitting

Landfills must install a final cover when they close. Current regulations include requirements for a conventional cover, as well as an allowance for alternative final covers. A water-balance cover is one type of alternative cover that is analogous to a sponge, where water (precipitation) is stored in the soil (sponge) layer until it reaches the maximum amount that can be stored (field capacity). Precipitation is stored in the soil during the cooler months when plants are dormant. Water is released back into the atmosphere through evaporation and transpiration.

A closing facility must design and construct a cover that minimizes water infiltration into the underlying waste. Depending on the waste streams disposed at the facility, site conditions, final

cover design and quality of the submittal, the review process may take additional permitting time, resulting in increased costs to the applicant and possible construction delays.

Alternative cover designs have been proposed by various facilities over the years. Most alternative covers proposed in the past have been water-balance soil covers. Many of the initial proposals submitted did not have sufficient information to facilitate an expedited approval, resulting in inefficient and costly reviews. Therefore, the division, with stakeholder help, developed a streamlined water-balance cover design guidance document that addresses permitting issues by allowing facilities to: 1) more easily propose a water balance cover design that meets the regulatory requirements with-

out the need for extensive and expensive modeling, 2) provide design criteria that expedite the permit review, resulting in reduced costs to the facility, and (3) provide guidance to stakeholders on the design, construction and establishment of water-balance covers.

Numerous stakeholder meetings were held with a variety of interested parties during the guidance development process. The guidance also has been vetted by nationally recognized waste containment researchers, practitioners and regulators. The division understands that the guidance is being promoted nationally by the EPA and other states for the development their own guidance for alternative final landfill covers.

Materials Management

Colorado's waste diversion industry continues to grow steadily, as does the number of recycling, composting and solid waste beneficial-use locations across the state.

To keep up with the industry's growth, continuous innovation and new means of waste diversion; the program underwent a year-long stakeholder process to develop an updated recycling regulatory framework. The updated recycling and beneficial-use regulations provide flexibility for the waste diversion industry to adopt new forms of material diversion while still providing

protection to human health and the environment. The revised regulations also address the department's duty to expand data collection and to include waste diversion entities previously not reporting materials reuse information vital to understanding material flow and waste diversion in Colorado.

In coordination with the Pollution Prevention Advisory Board's Recycling Resource Economic Opportunity Fund grants, the Materials Management Group focused on improving access to recycling in rural areas of the state. This goal was achieved by promoting municipal partnerships utilizing the method known as hub-and-spoke recycling. Although hub-and-spoke recycling is not



A drop-off site, or "spoke," provides access to recycling for rural residents in eastern Colorado by partnering with other municipalities in the region.

a new concept, the expansion of recycling programs in Colorado utilizing this successful

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By the Numbers: Overview of Colorado's Solid Waste

Regulatory Authority and Program Elements

The program is located within the Hazardous Materials and Waste Management Division of the Colorado Department of Public Health and Environment. The program is responsible for ensuring compliance with laws pertaining to the management of solid waste. Primary program elements include compliance assistance; compliance monitoring and enforcement; remediation, permitting and information management.

The program does not receive any monies from Colorado's General Fund, and is 100 percent fee supported. The Act and the Regulations (6-CCR 1007-2) provide three means of collecting fees to support the program. These include the Solid Waste

User Fee (SWUF) or "tipping fee," the Hourly Activity Fee and the Annual Facility Fee. During 2010 the Solid and Hazardous Waste Commission received authority for and passed regulations setting the SWUF. The SWUF supports approximately 85 percent of the program's funding (Figure 1) and the program is expected to have adequate revenue for at least three years.

During 2012, the program continued its efforts to improve efficiency and effectiveness following the passage of HB 07-1288. Examples of these activities include:

- Improved facility assistance delivered on inspections;
- Streamlined inspection and

reporting process by integrating new inspection checklists;

- Development of new workload tracking tools;
- Development of new database (ongoing);
- Continued improvement of data collection especially in the waste tire and recycling arenas;
- Cross-media integrations with internal and external customers;
- Integrated meetings with owners and air, water and waste regulators to expedite issue resolution; and
- Initiation of a permitting streamlining and checklist effort.

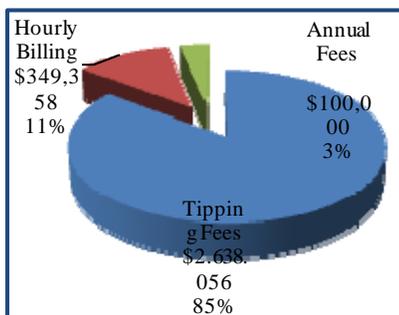


Figure 1: 2010 Solid Waste Revenues

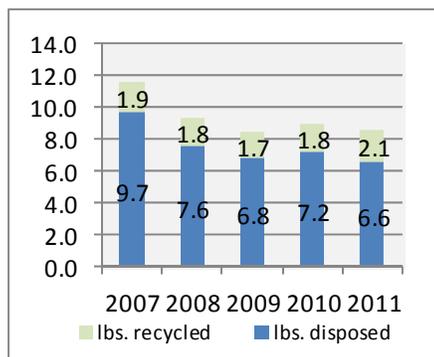


Figure 2: Per Person Daily Waste Generation

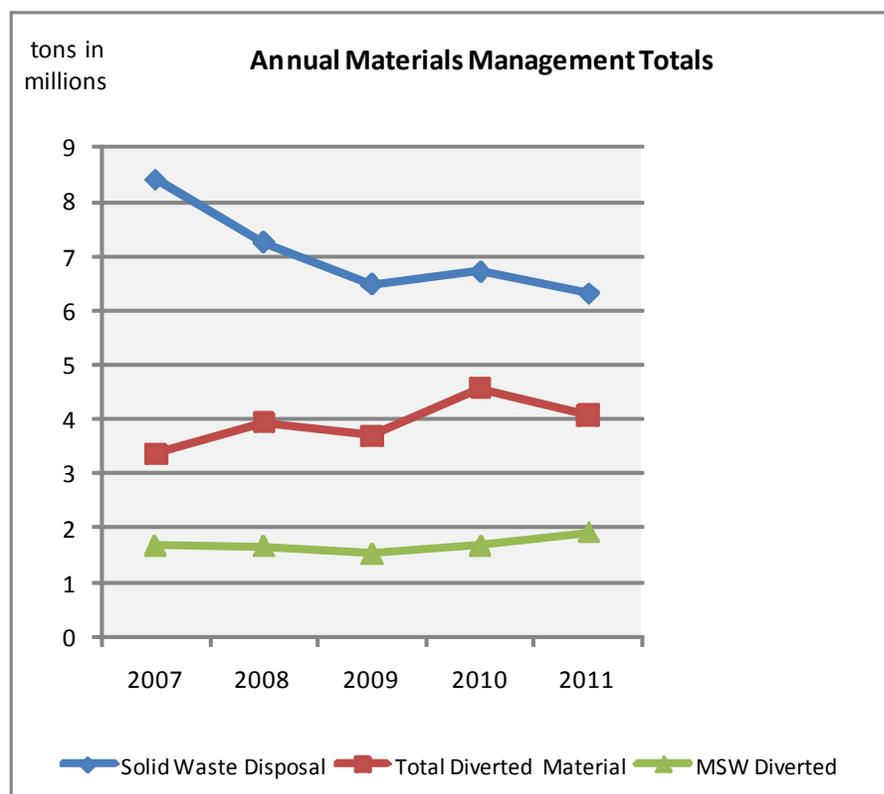


Figure 3: 2010 Materials Management

Waste and Materials Management Program

ENFORCEMENT ACTIONS

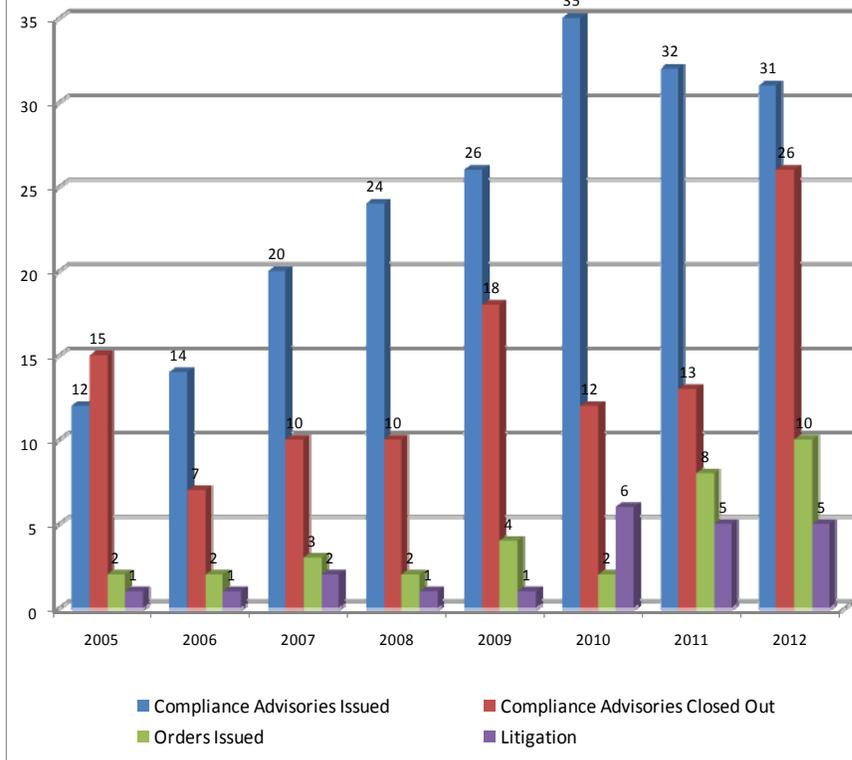


Figure 4: Enforcement Actions

Annual Collected Feedstock

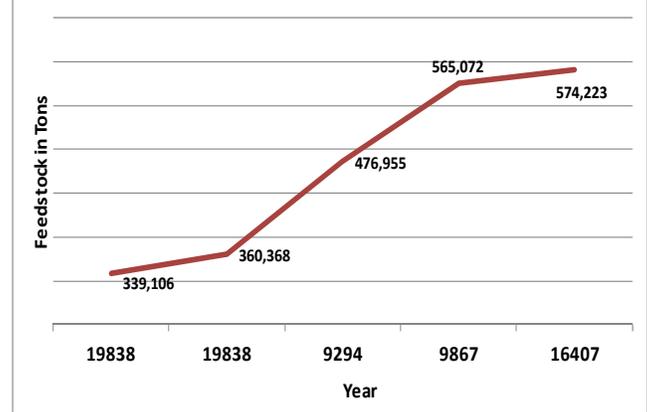


Figure 6: Annual Collected Compost Materials

Additional Information

This report and additional data not reproduced here are available on the Colorado Department of Public Health and Environment website. For more information, please visit:

www.colorado.gov/cdphe/solidwaste.htm and www.recycle4colorado.info

PROJECT MANAGEMENT DATA

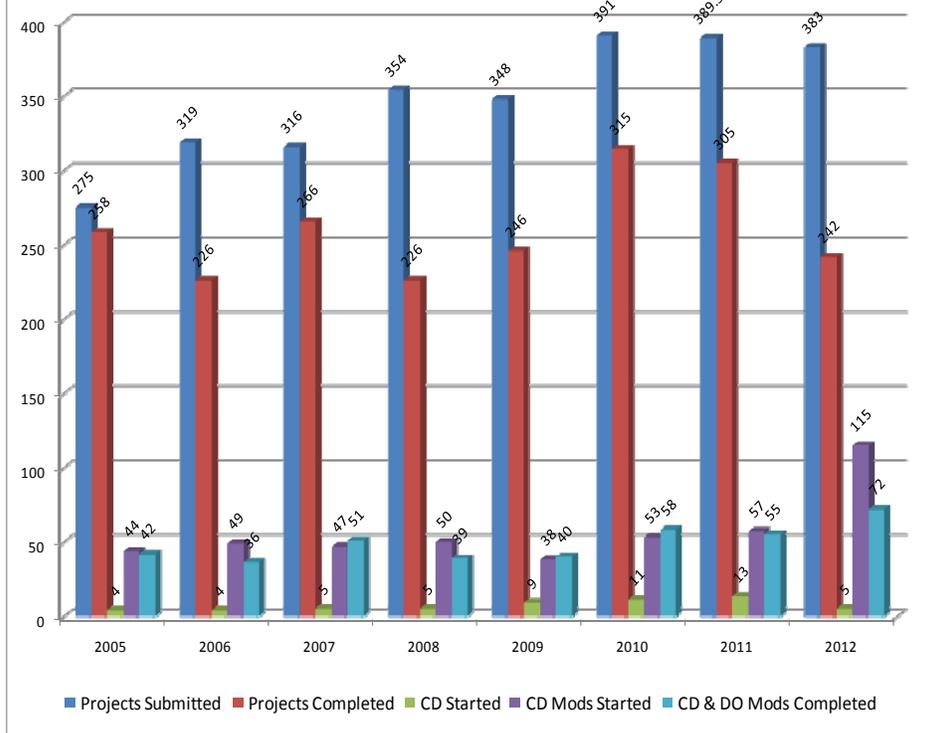


Figure 5: Project Management Data

Impacts and Success Stories

Materials Management

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model is improving access to recycling in rural communities.

The Materials Management Group continues to issue beneficial-use determinations for entities finding new uses for industrial waste streams. Beneficial-use determinations (BUDs) authorize businesses to find new uses for materials once considered solid waste while providing

protection for the environment. Beneficial-user determinations offer environmental benefits by reducing resource extraction impacts, reducing greenhouse gas emissions from raw product replacement, economic site redevelopment and a decrease in landfill disposal. Additionally, BUDs give businesses an extra method to reduce waste while improving material reuse, thereby strengthening their bottom lines.

Oil and gas operators and service companies are continu-

ally finding new ways to reuse and repurpose oilfield waste. The Materials Management Group currently is working with five exploration and production water recycling companies to develop or review design and operations plans. These recycling facilities will provide drilling operators with recycled water that may be used in lieu of fresh water, which translates to a large reduction in demand on freshwater aquifers in Colorado.

Compliance

During FY 2012, the Solid Waste Compliance Assurance Unit began to realize efficiencies from policy changes made at the end of the previous fiscal year. One such change was the addition of a streamlined enforcement mechanism called an "early settlement agreement" that was added to the Solid Waste Enforcement Policy. Although discussed briefly in last year's report, the early settlement agreement was first utilized by the unit this year and with success. We believe it will play an increasing role in the expedited resolution of future solid waste enforcement actions.

The solid waste inspectors now are able to focus on inspection, enforcement and outreach activities instead of shared permitting duties. The unit added one-half of an FTE in the Grand Junction office. Relief from document reviews, combined with the additional staff member enabled inspectors to focus on increasing

Already used successfully in the division, self-certification teaches industry personnel to evaluate and certify their own compliance status.

the number of field inspection and assistance visits.

Inspections increased by 38 percent during 2012. Of the 141 inspections performed, roughly one third were complaint inspections, one third permitted facilities and the remainder were compliance assistance site visits, enforcement follow-up and file review inspections.

The number of enforcement actions has remained level with prior years. Significantly, as of the end of FY2012, the unit has finished some multi-year court actions, freeing staff to focus on inspection and assistance activities.

Inspectors also participated in revising Section 5.5, the asbes-

tos-contaminated soil regulations. This effort involves a large outreach and stakeholder group and will provide regulated entities more flexibility in managing redevelopment projects. Inspectors also assisted with the development of guidance for the new waste impoundment regulations.

Finally, the unit is piloting a self-certification program. Already used successfully in the Hazardous Materials and Waste Management Division, self-certification teaches industry personnel to evaluate and certify their own compliance status. The department reviews the certifications and conducts random verification inspections.

Trends to Watch

Solid waste is a very broad and dynamic universe, encompassing the storage, treatment, processing and disposal of various kinds of waste materials. In addition, the program also works with the recycling and materials-management business sectors. We endeavor to integrate the solid waste storage, treatment and disposal activities with the recycling and beneficial use activities. This integrated approach is becoming increasingly important, as evidenced by the multi-year increase in recycled materials in Colorado.

The Resource Recovery and Economic Opportunity grants are working to foster the development of hub and spoke infrastructure. In an effort to integrate traditional solid waste management activities with recycling activities we will be developing a process that will involve internal and external stake-

holders across the state to revisit Colorado's structure and approach to materials management.

We will be looking for ways to marry recycling hub-and-spoke activities with solid waste collection, transportation, treatment and disposal activities. We expect there will be some bumps along the way, but sincerely believe the process will result in an improved statewide materials management strategy.

On a more detailed front we are seeing an increase in exploration and production water recycling facilities. These facilities provide a great resource to Colorado by treating and reconditioning exploration and production water so it may be reused, in accordance with local approval, for beneficial uses both within and outside of oil and gas exploration activities.

In addition, we continue to explore and expand the benefits of land application of biosolids as soil amendments and conditioners.

Legislation, Regulations and Workgroups

Three laws were passed during the 2012 legislative session: 1) Senate Bill 12- 077, which eliminated our regulation of "yellow" grease, 2) Senate Bill 12-133, which imposed an electronic waste landfill ban and 3) House Bill 12-1034, an update to the existing waste tire laws that were re-written following the previous passage of House Bill 10-1018.

Senate Bill 12-077 repealed the department's ability to regulate "yellow" grease unless co-mingled with waste grease in a waste grease interceptor. Yellow grease typically is a commodity subject to theft, rather than a waste that is illegally disposed. Therefore yellow grease did not need to be regulated the same as grey or waste grease. The implementing regulations were passed in November following a public stakeholder process.

Senate Bill 12-133 imposed a landfill ban prohibiting individuals from disposing of specified types of electronic waste in landfills. The stakeholder process was completed during 2012 and implementing regulations are proposed for promulgation during the February 2013 Solid and Hazardous Waste Commission meeting. The stakeholders were very supportive of this regulation and offered to stay together to help develop the department's outreach and education program and activities



House Bill 12-1034 accomplished several tasks including: 1) clarifying the definition of "end user" to be consistent with statutory requirements, 2) requiring processors to fully document the sale and end use of their tire-derived product and 3) to clarify that a processor may use a tire-derived product on its own property. Following a stakeholder process the regulations were passed in November 2012. However, a challenge to the rule will be addressed during a February 2013 rule re-hearing.

2011 Recycling and Waste Diversion Facts

Municipal Solid Waste (MSW) Annual Totals

Total MSW Generated
8,057,322 tons

MSW Diversion Rate
23.8 percent (11.2 percent excluding scrap metal)

Total Diversion Rate
39.2 percent



Wood waste and pallets are recycled into landscaping mulch at a Denver recycling location.

Per Capita Generation

MSW Disposed: 6.6 lbs.
MSW Recycled: 2.1 lbs.
MSW Generated: 8.7 lbs.

1,918,570 tons of MSW was recycled in Colorado in 2012.

2.1 million tons of asphalt, concrete, C&D and organic material was diverted from Colorado landfills for recycling.

1,170,431 tons of recyclable material was used in manufacturing glass, plastic and metal products statewide.

236,197 tons of single-stream recycling was collected.

172,710 tons of municipally generated material, including food waste, was composted.

24.6 million pounds of electronic waste was collected for recycling.

Benefits of MSW Recycling

Energy Savings

1.7 million barrels of oil²

Energy savings were equivalent to energy used by 90,618 homes in a year²



Natural Resources Conserved

15,096 acres of forest²

8,297 railcars worth of coal¹



Greenhouse Gas Emissions Avoided

1.5 million metric tons of carbon-dioxide emissions prevented, which equates to emissions from 298,780 cars²



¹US EPA "WARM" Waste Reduction Model Version 11

²US EPA "Greenhouse Gas Equivalency Calculator" updated May 2011

