



A REPORT
TO THE
MONTANA
LEGISLATURE

PERFORMANCE AUDIT

Mine Safety Inspection and Training Programs

Department of Labor and Industry

JANUARY 2012

LEGISLATIVE AUDIT
DIVISION

11P-10

**LEGISLATIVE AUDIT
COMMITTEE**

REPRESENTATIVES

RANDY BRODEHL
brodehl@centurytel.net

TOM BURNETT
Tburnetthd63@hotmail.com

VIRGINIA COURT
Vjchd52@yahoo.com

MARY McNALLY
mcnallyhd49@gmail.com

TRUDI SCHMIDT
trudischmidt@q.com

WAYNE STAHL, VICE CHAIR
wstahl@nemontel.net

SENATORS

DEBBY BARRETT
grt3177@smtel.com

GARY BRANAE
garybranae@gmail.com

TAYLOR BROWN
taylor@northernbroadcasting.com

CLIFF LARSEN
cliff@larsenusa.com

FREDRICK (ERIC) MOORE
mail@SenatorEricMoore.com

MITCH TROPILA, CHAIR
tropila@mt.net

MEMBERS SERVE UNTIL A
MEMBER'S LEGISLATIVE TERM
OF OFFICE ENDS OR UNTIL A
SUCCESSOR IS APPOINTED,
WHICHEVER OCCURS FIRST.

§5-13-202(2), MCA

FRAUD HOTLINE
(STATEWIDE)
1-800-222-4446
(IN HELENA)
444-4446

PERFORMANCE AUDITS

Performance audits conducted by the Legislative Audit Division are designed to assess state government operations. From the audit work, a determination is made as to whether agencies and programs are accomplishing their purposes, and whether they can do so with greater efficiency and economy.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Members of the performance audit staff hold degrees in disciplines appropriate to the audit process.

Performance audits are performed at the request of the Legislative Audit Committee which is a bicameral and bipartisan standing committee of the Montana Legislature. The committee consists of six members of the Senate and six members of the House of Representatives.

AUDIT STAFF

STEVEN E. ERB

ANGUS K. MACIVER

Reports can be found in electronic format at:
<http://leg.mt.gov/audit>

LEGISLATIVE AUDIT DIVISION

Tori Hunthausen, Legislative Auditor
Deborah F. Butler, Legal Counsel



Deputy Legislative Auditors
Cindy Jorgenson
Angie Grove

Month 2011

The Legislative Audit Committee
of the Montana State Legislature:

This is our performance audit of the Mine Safety Program managed by the Department of Labor and Industry.

This report provides the Legislature information about the department's mine safety inspection and training programs. This report includes recommendations addressing the continuing effectiveness of state mine safety inspections and the funding and management of mine safety training.

We wish to express our appreciation to Department of Labor and Industry personnel for their cooperation and assistance during the audit.

Respectfully submitted,

/s/ Tori Hunthausen

Tori Hunthausen, CPA
Legislative Auditor

TABLE OF CONTENTS

Figures and Tables.....	iii
Appointed and Administrative Officials	iv
Report Summary	S-1
CHAPTER I – INTRODUCTION.....	1
Introduction	1
Montana’s Mining Industry	1
Federal and State Regulation of the Mining Industry.....	3
Federal Regulation of Mines	3
State Regulation of Mines	3
Program Expenditures and Funding.....	4
Audit Scope, Objectives, and Methodologies.....	4
Audit Scope.....	5
Audit Objectives.....	5
Audit Methodology.....	5
Report Organization	6
CHAPTER II – MINE SAFETY INSPECTIONS	7
Introduction	7
Federal Regulations Outline Mine Safety Inspection Standards.....	7
State and Federal Mine Safety Inspection Activity.....	8
Have State Inspections Improved Mine Safety?	10
Analysis of Accident Rates	11
Accident Rates Have Declined Faster for Mines Not Subject to State Inspections.....	11
Accident Rates in Sand and Gravel Mines have Declined Faster than Rates in Coal Mines	13
Analysis of Workers’ Compensation Claims Rates.....	13
Insurance Claims Rates for Noninspected Mines have Declined, but Rates in Inspected Mines have Increased	14
Inspections and Accident Rates in Other States.....	14
Differences in Accident Rate Trends for Rocky Mountain States	15
Effectiveness of State Mine Inspections.....	16
Analysis Controlled for Different Factors Relating to Safety	16
Available Data Does Not Support the Effectiveness of State Inspections.....	16
Department Should Seek Revisions to Mine Safety Statutes	17
CHAPTER III – MINE SAFETY TRAINING.....	19
Introduction	19
Federal Regulations on Mine Safety Training.....	19
Trends in Mine Safety Training Activities	19
Demand for Training Services has Increased Significantly	20
Long-Term Financial Sustainability of Training Program is Unclear.....	21
Long-term Financial Sustainability of Training Programs	21
Static Federal Funding Results in Increasing Pressure on State Revenues.....	22
Financial Sustainability Options for Mine Safety Training	23
Ending State Provision of Mine Safety Training.....	23
Contracting for Training Provision through Community Colleges.....	24
Charging Nominal per Participant Fees.....	24

Department Should Address Financial Sustainability Options.....25
Review of Training Records Identified Inefficiencies in Class Scheduling.....26
Advance Scheduling of Some Training Classes Would Improve Program Cost-
Effectiveness.....26

DEPARTMENT RESPONSE

Department of Labor and Industry..... A-1

FIGURES AND TABLES

Figures

Figure 1	Locations of Montana Mines by Product Type.....	2
Figure 2	Federal Inspection and Investigation Activity in Montana Mines	9
Figure 3	Accident Rate (per 100 employees) by Mine Type	12
Figure 4	Workers' Compensation Claims Rate (per 100 employees) by Mine Type.....	14
Figure 5	Combined State Mine Accident Rate (per 100 employees)	15
Figure 6	Department Training Participants by Class Type	20
Figure 7	Mine Safety Program Expenditures by Funding Source	22

Tables

Table 1	Mine Safety Program Expenditures	4
Table 2	State Inspection Events and Hours.....	8
Table 3	Mining Industry Training Costs and Funding	23

APPOINTED AND ADMINISTRATIVE OFFICIALS

Department of Labor and Industry

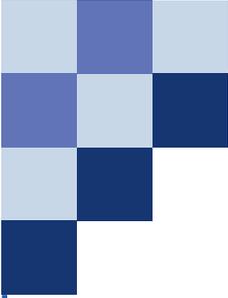
Keith Kelly, Commissioner

Mark Cadwallader, Agency Counsel

Jerry Keck, Administrator, Employment Relations Division (through
December 2011)

Diane Ferriter, Acting Administrator, Employment Relations Division
(effective January 2012)

Bryan Page, Safety Bureau Chief


 MONTANA LEGISLATIVE AUDIT DIVISION

PERFORMANCE AUDIT

Mine Safety Inspection and Training Program

Department of Labor and Industry

JANUARY 2012

11P-10

REPORT SUMMARY

State regulation of mining consists of inspections and miner training; the state mine inspection program duplicates federal regulation of mines and is not effective; changes in training programs should be considered to improve financial sustainability and cost-effectiveness.

Context

The Department of Labor and Industry (the department) operates a mine safety program, which conducts inspections of mines and provides safety training for mine workers. Federal mine safety laws allow for dual regulatory activities at both federal and state levels. This means that although the federal Mine Safety and Health Administration (MSHA) conducts mine inspections, some states, including Montana, have also continued to inspect mines.

Until 1997, the department's mine safety program was responsible for conducting inspections of all mines in the state. Changes made during the 1997 Legislative Session resulted in state inspection of metal/nonmetal mines ending, although regular inspections of both coal mines and sand and gravel mines continued. The state's mine safety program now consists of regular mine inspections and since 2005, the department has averaged around 100 inspection events annually.

Federal law mandates workplace safety training for miners. Although many miners in Montana receive training through the department's program, mine operators can provide training themselves or use private providers. The department offers mine safety training on an as-needed basis and since 2003, demand for department mine safety training more than

doubled. In 2010, almost 2,900 individuals received training through the program.

Results

Federal and state mine safety data indicates that continuing duplicative state inspections of mines is not effective. Montana's metal/nonmetal mines have gradually improved their safety records and Montana's experience mirrors that of some other regional states that have stopped inspecting mines. These states have improved mine safety to the point where there is a negligible difference when compared with states that still conduct inspections. If the department were to cease regular state mine safety inspections, resources could be used more efficiently in other areas. The department should seek revisions to mine safety inspection statutes to ensure its regulatory activities protect workplace health and safety in mines, while not duplicating federal inspections.

Up until 2011, demand for training services had increased in every year and the department was able to continue providing services while controlling costs associated with the program. However, despite increased demand for services, the department continues to offer training with very minimal costs to participants.

(continued on back)

Faced with the possibility of stagnant federal funding, the long-term financial sustainability of the training program is unclear. To ensure financial stability of mine safety training programs, the department should review available options and adjust the basis for funding these activities. This could include ending state provision of mine safety training, contracting with the state university system to provide the services, charging nominal participation fees for training, or other available options.

Audit work involved reviewing mine safety training records showing the types of classes provided and the number of class participants. Out of approximately 200 training classes in 2010, we identified several classes where there were a limited number of participants attending. Providing training for a very limited number of participants rather than pooling/combining participants in larger classes is not cost-effective. The department relies on contact from mine operators to develop training schedules, rather than pre-scheduling training events. The department should address training class sizes and scheduling. This would help avoid excessive and unnecessary costs and maintain the cost-effectiveness of the program as a whole.

Recommendation Concurrence	
Concur	3
Partially Concur	0
Do Not Concur	0
Source: Agency audit response included in final report.	

For a complete copy of the report (11P-10) or for further information, contact the Legislative Audit Division at 406-444-3122; e-mail to lad@mt.gov; or check the web site at <http://leg.mt.gov/audit>
Report Fraud, Waste, and Abuse to the Legislative Auditor's FRAUD HOTLINE
Call toll-free 1-800-222-4446, or e-mail lad@mt.gov.

Chapter I – Introduction

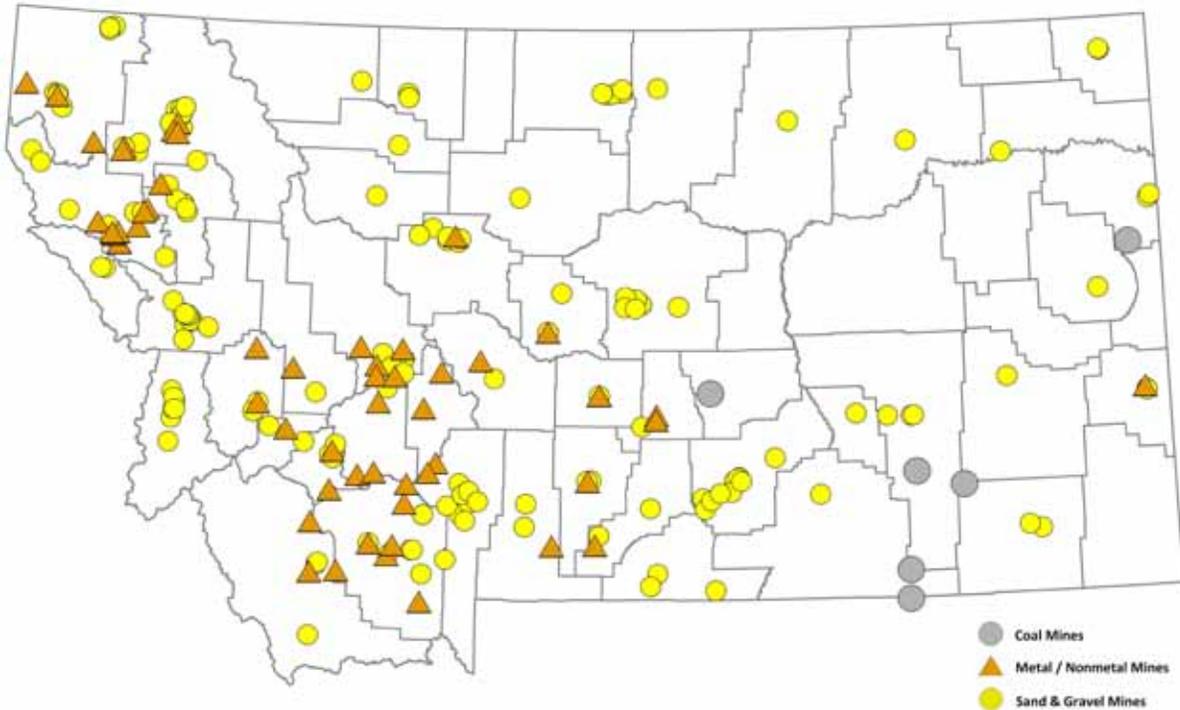
Introduction

The mining industry has played an important role in Montana's economy since the earliest days of territorial settlement. Given its role in the development of the state, the mining industry also has a long history of regulation by state government. Montana has been regulating mine safety since the 1890s, when the state began employing mine inspectors. Today, the Department of Labor and Industry (the department) operates a Mine Safety program within its Employment Relations Division. The Mine Safety program conducts inspections of mines and provides safety training for miners and others working in mines. The Legislative Audit Committee prioritized a performance audit of the Mine Safety program for fiscal year 2011.

Montana's Mining Industry

As of June 2011, 307 mines in Montana were operational for some period of time. Many of these mines are small sand and gravel pits, which operate only for short periods of time. The federal regulator of mines, the Mine Safety and Health Administration (MSHA), classifies mines according to whether they are active or intermittent operations. In Montana around 32 mines or 10 percent of the total are classified as active. These mines are typically large permanent operations with 50 or more employees. MSHA regulates and classifies mines according to the type of product being mined. The primary distinction here is between coal mining and metal/nonmetal mining, which essentially covers all other types of mines that do not extract coal, but also includes sand and gravel mines as a separate sub-classification. The following figure shows the location of mines in Montana at the end of 2010.

Figure 1
Locations of Montana Mines by Product Type
 2010



Source: Compiled by the Legislative Audit Division from Mine Safety and Health Administration records.

Montana's six operational coal mines are all located in the southeast of the state, metal/nonmetal mines (this includes mining of both metallic and nonmetallic minerals, as well as dimensional and crushed stone) are concentrated in the southwest and northwest, and sand and gravel mines are found throughout the state (these mines typically provide sand gravel products for the construction industry, road maintenance, etc.)

Mining industry employment in Montana has fluctuated along with cyclical trends in commodities markets. Over the past 25 years, the mine industry has employed between approximately 3,500 and 4,900 people. MSHA employment data for calendar year 2010 shows the industry employed an annual average of approximately 4,400 people (this includes employment in mine processing/milling plants and office workers, but does not include contractor staff working regularly at mines).

Federal and State Regulation of the Mining Industry

Unlike some governmental regulation, federal mine safety laws allow for dual regulatory authority at both federal and state levels. This means that although MSHA conducts inspections, investigations and other regulatory activities for all mines, states are not precluded from developing their own regulations, conducting inspections, etc. Consequently, some states, including Montana, have continued to provide regulatory oversight of mines in conjunction with MSHA.

Federal Regulation of Mines

Federal regulation of mining was initially authorized prior to 1900, but until the 1970s the federal government largely deferred to the inspection and enforcement activities of states. During the 1960s and 1970s, federal legislation established and expanded an increasingly active regulatory role for MSHA (which was organized as part of the federal Department of Labor in 1977), and increased the scope and application of federal mine safety rules and regulations. The result of these changes has been an increasingly active federal inspection and enforcement program. MSHA currently maintains a field office in Helena, which is responsible for many of the agency's inspections in Montana (a field office in Gillette, Wyoming, is responsible for inspecting Montana's coal mines). In 2010, MSHA conducted around 470 inspections or investigations in Montana mines. In addition to inspections, MSHA conducts research on mine safety, collects and maintains accident and injury records and other statistics for mines, and regulates, manages and funds mandatory mine safety training activities.

State Regulation of Mines

Until 1997, the department's Mine Safety program was responsible for conducting inspections of all mines in the state and had been doing so for over 100 years. Changes made during the 1997 Legislative Session resulted in state inspection of metal/nonmetal mines ending, although regular inspections of both coal mines and sand and gravel mines continued. The state's Mine Safety program now consists of regular mine inspections, and providing safety training for mine workers. Federal law mandates workplace safety training for miners; new employees must attend training prior to beginning work in a mine and all employees must attend annual refresher courses. Mine operators are required to ensure these training requirements are met and are also required to pay their employees while they attend training. Although many miners in Montana receive training through the department's program, mine operators can provide training themselves or use private providers.

Mine safety requirements in Montana are based on federal mine safety laws and regulations. The program operates within the Employment Relations Division's Safety

Bureau, which is also responsible for the department's occupational safety and health services. The Mine Safety program is authorized six full-time equivalent employees. Program staff has MSHA mine safety certifications, conducts inspections, and teaches mine safety training classes.

Program Expenditures and Funding

As shown in the following table, the Mine Safety program typically expends over \$600,000 annually, with approximately 70 percent of expenditures for personal services.

Table 1
Mine Safety Program Expenditures
Fiscal Years 2005 through 2011

Fiscal Year	Personal Services	Operating Expenses	Total Expenditures
2005	\$304,713	\$131,663	\$436,377
2006	\$336,736	\$127,421	\$464,156
2007	\$399,827	\$145,021	\$544,848
2008	\$433,009	\$171,376	\$604,384
2009	\$452,394	\$188,994	\$641,388
2010	\$460,482	\$183,650	\$644,132
2011	\$421,649	\$184,784	\$606,433

Source: Compiled by the Legislative Audit Division from SABHRS records.

The program is funded from two sources: the Workers' Compensation Administration Fund and federal grant funding through MSHA. The Workers' Compensation Administration Fund is a state special revenue source and is derived from assessments made against employers or insurers that provide workers' compensation insurance. This funding source covers the majority of the department's regulation of the state's workers' compensation insurance system. Federal grant funding is provided through a program managed by MSHA that funds state mine safety activities. Montana's program currently receives approximately \$137,000 annually in federal grant funding and federal revenues will typically fund approximately 20 percent of program costs.

Audit Scope, Objectives, and Methodologies

Mine safety regulatory activities in Montana consist mainly of inspecting mines and providing miner training. We focused our audit work on these two areas because in both cases there are alternatives available to state government involvement; inspections

are also conducted by a federal regulator (MSHA), and training can be provided by the mining industry or through private providers.

Audit Scope

Audit scope was developed to include the department's mine safety inspection and training programs and does not include any other regulatory activities of the department relating to general employment law, workplace safety in general, or the workers' compensation insurance system. Our scope only includes regulation of the mining industry as this relates to workplace safety and employee training, and does not include environmental or other regulations applicable to mining.

Analysis of MSHA regulatory data covers the period between calendar years 1985 and 2010, with particular emphasis on trend data in the period after 1997, when state inspections of metal/nonmetal mines ceased. Analysis of financial and operational data for Montana's programs generally focused on more recent activity between state fiscal years 2005 to 2011.

Audit Objectives

Based on risk assessment work and audit scope decisions, we developed the following objectives:

1. Determine whether current state mine safety inspection activities have resulted in measurable improvements in workplace health and safety in the state's mining industry.
2. Determine if mine safety training activities are conducted on a financially sustainable and cost effective basis.

Audit Methodology

Audit methodologies were developed to address our objectives and included the following:

- ◆ Analysis of MSHA mine safety data, including accidents/injuries, compliance violations, and mine employment and production for all Montana mines. This involved analysis of MSHA data on a 100 percent basis; reported results derived from MSHA data are not subject to sampling error.
- ◆ Analysis of MSHA accident and employment data for seven other regional states.
- ◆ Analysis of department workers' compensation claims and benefit data for mining industry employers.
- ◆ Analysis of inspection activity data for both MSHA and the department's program.
- ◆ Interviews with department management staff, Mine Safety program supervisors and staff, and other Employment Relations Division employees.

- ◆ Interviews with federal regulatory and program management officials.
- ◆ Interviews with mine safety regulatory officials in surrounding states and review of information from other states relating to inspection activities and training programs.
- ◆ Review of selected program inspection records between 2006 and 2011.
- ◆ Collection and review of SABHRS financial information.
- ◆ Analysis of department training records.
- ◆ Attendance at an on-site department-provided training event.
- ◆ Interviews with mining industry representatives and union officials representing mine workers.

Report Organization

The remainder of this report is organized as follows:

- ◆ Chapter II – Mine Safety Inspection Activities (addressing our first objective)
- ◆ Chapter III – Mine Safety Training Activities (addressing our second objective)

Chapter II – Mine Safety Inspections

Introduction

Federal law establishes standards for the safe operation of mines and the protection of mine workers. These standards are enforced by the federal Mine Safety and Health Administration (MSHA), which has the power to enter and inspect all mines, identify unsafe working conditions, and enforce compliance through legal actions, penalties, and other means. In Montana, the Department of Labor and Industry (the department) also has regulatory authority over the mining industry and operates a mMine Safety program that includes periodic inspection of some mines.

Federal Regulations Outline Mine Safety Inspection Standards

Detailed mine safety standards are established in the Code of Federal Regulations, Title 30 (Mineral Resources), Chapter 1. Over 700 pages of federal regulations outline the duties of MSHA and establish standards for the safe operation of mines. Mine operators have to comply with many technical safety standards and both federal and state inspections of mines are designed and conducted to assess compliance with these standards. Some of the elements that would typically be addressed as part of a Mine Safety inspection include:

- ◆ Construction and maintenance of mine shafts, walls, ceilings and other structural features
- ◆ Fire prevention and control
- ◆ Air quality and air monitoring equipment and procedures
- ◆ Use of explosives
- ◆ Loading, hauling and dumping of mined materials and waste products
- ◆ Electrical engineering and components
- ◆ Machinery and equipment
- ◆ Materials storage and handling
- ◆ Illumination and ventilation systems
- ◆ Hoisting of personnel and equipment
- ◆ Maintenance of mine safety programs, training requirements and accident reporting documentation

Mine inspections are time-consuming and an inspection of a large mine will typically take 4 or 5 days to complete, with further time spent documenting results and following up on any corrective actions that are necessary.

State and Federal Mine Safety Inspection Activity

Prior to 1997, the department conducted regular inspections of all mines in the state. During the 1997 session, the Legislature passed Senate Bill 325, which removed the department's authority to enter and conduct inspections in metal/nonmetal mines, but maintained state inspections for both coal mines and sand and gravel mines. This legislation recognized that the development of federal regulatory programs meant Montana's inspections duplicated MSHA inspections.

State inspections of coal mines and sand and gravel mines have continued since 1997. Under §50-73-402, MCA, the department is authorized to enter coal mines to conduct inspections and §50-73-406, MCA, requires all coal mines to be inspected at least every quarter. Section 50-72-201, MCA, authorizes the department to conduct inspections of sand and gravel mines, but there is no mandated inspection frequency for these mines. Since 2005, the department has averaged around 100 inspection events annually, including investigations of incidents and complaints. The following table shows the number of inspection events and the number of hours logged by department inspectors since 2005 for different types of mines.

Table 2
State Inspection Events and Hours

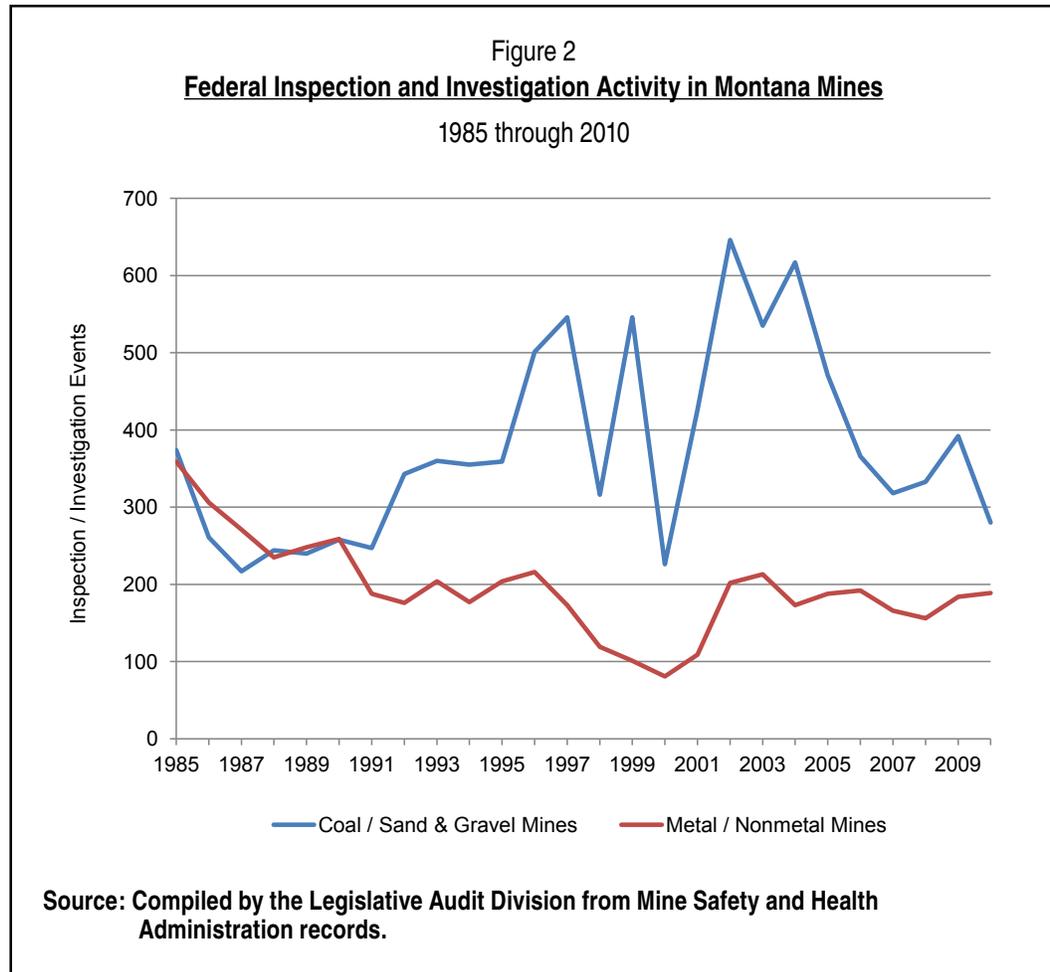
Fiscal Years 2005 through 2011

Fiscal Year	Coal Mines		Sand & Gravel Mines		Total Events	Total Hours
	Events	Hours	Events	Hours		
2005	34	1,020	83	667	117	1,687
2006	30	742	55	694	85	1,436
2007	33	753	69	655	102	1,408
2008	34	773	91	1,059	125	1,832
2009	34	785	87	743	121	1,528
2010	26	779	91	864	117	1,643
2011	30	956	43	366	73	1,322

Source: Compiled by the Legislative Audit Division from department records.

As shown, department staff spent around 1,300 hours inspecting mines last year. There was a reduction in both the number of inspections and the number of hours between 2010 and 2011, largely as a result of fewer inspections of sand and gravel mines (as stated above, there is no mandated frequency for inspection of these mines).

Federal inspection efforts are not limited to coal mines and sand and gravel mines. MSHA inspects all the state's mines on a regular basis. Federal regulations require inspections at stated intervals for different kinds of mine operations, with the result that most of the mines in the state will receive at least one and, more likely, multiple MSHA inspections during the course of a year. The following figure illustrates the trend in the number of MSHA inspections for Montana mines and identifies the type of mines; coal and sand and gravel mines are shown with a blue line and metal/nonmetal mines with a red line.



MSHA conducts between 200 and 300 regular inspections of Montana mines annually, with another 200 specific inspections, and accident or incident investigations also occurring. A regular inspection will typically involve a full review of all the safety standards and other requirements applicable to a specific mine site. During calendar year 2010, MSHA inspectors logged approximately 8,800 hours on-site in Montana mines. Around 5,400 hours were spent in metal/nonmetal mines, 2,200 hours in coal mines, and 1,200 hours in sand and gravel mines.

Have State Inspections Improved Mine Safety?

Because both federal and state mine inspections follow the same federal standards, state inspections duplicate the activities of federal regulators. The department justifies this duplication of effort on the basis that state inspections provide additional oversight and are nonpunitive in nature; state inspectors have a more cooperative relationship with mine operators, which provide more opportunities to address safety concerns. The department recognizes that state inspections look at the same things as federal inspections, but maintains that this additional effort is effective because it makes these mines safer than would otherwise be the case.

If state inspections are effective, we would expect to see the results in terms of improvements in key measures of workplace safety in the mines that are inspected. Conversely, we would expect to see the opposite effect in mines that are not subject to state inspections i.e., these mines would not benefit from additional state inspections, so there would be no improvements or more limited improvements in key measures of workplace safety.

The decision in 1997 to end state inspection of metal/nonmetal mines provides an opportunity to analyze whether state inspections have made a difference to workplace safety in mines. If state inspections make a difference, we expected to see continuing improvements in workplace safety in the mines that were still inspected after 1997 (coal mines and sand and gravel mines), and either no improvement or much less improvement in the mines where state inspections ended (metal/nonmetal mines). By analyzing the differences in workplace safety trends for mines subject to inspections and those that were not, we formed a basis for making determinations about the effectiveness of state inspections. We looked at trends in three key measures of workplace safety for mines, discussed as follows.

Accident rates – safety improvements should be evident in a decreasing accident rate. If state inspections are effective, the accident rate in coal mines and sand and gravel mines should have declined after 1997, and the rate in metal/nonmetal mines should either have increased or declined at a slower rate.

Workers' compensation claims rates – safety improvements should also be evident in the rate at which mine workers make workers' compensation claims for workplace illnesses/injuries. If state inspections are effective, the workers' compensation claims rate in coal mines and sand and gravel mines should have declined after 1997, and the rate in metal/nonmetal mines should either have increased or declined at a slower rate.

Accident rates in other states – because some regional states have stopped state inspections of mines altogether and others have continued inspections, safety improvements should also be evident in the state accident rates. If state inspections are effective, accident rates for all mine types should have declined where state inspections are conducted, and they should have increased or declined at a slower rate in the states that have stopped doing their own inspections.

Each of these trends in key measures of mine workplace safety and the results of our analysis are discussed in more detail in the following sections.

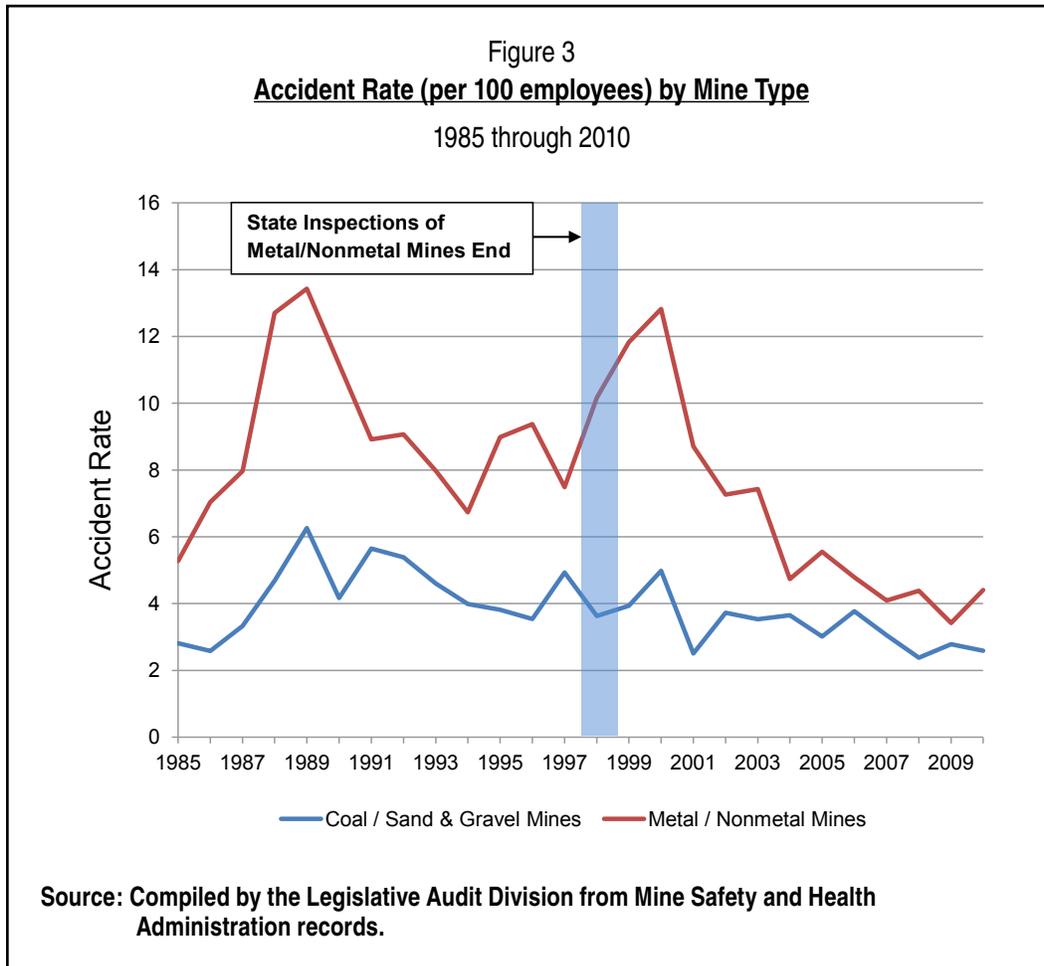
Analysis of Accident Rates

MSHA has been collecting, compiling and analyzing incident data for accidents, injuries and illnesses occurring in mines for many years. We obtained MSHA data for accidents in Montana mines that have occurred since 1985. This data includes detailed information on 6,885 accidents that have occurred in mines of all types; 98 percent of these incidents involved various degrees of injuries to mine workers and 31 incidents involved fatalities.

The number of accidents needs to be adjusted based on the intensity of mining activity in the state over time. The industry standard measure uses an accident rate based on the number of employees. To determine the accident rate, we combined MSHA accident data with other MSHA data showing the number of employees in Montana mines. Using this data, we identified the number of accidents per 100 mine employees and analyzed trends over time. The accident rate data was broken out between mines that are subject to state inspections (coal mines and sand and gravel mines) and those that are not (metal/nonmetal mines). By looking at trends for these two groups, we can determine if there were any substantive changes in accident rates after the department stopped conducting inspection of metal/nonmetal mines in 1997.

Accident Rates Have Declined Faster for Mines Not Subject to State Inspections

The following figure shows the accident rate trend for mines inspected by the department (blue line), versus those that are not (red line). The figure is annotated to show the period of time during which state inspections of metal/nonmetal mines ceased.



Stopping state inspections of metal/nonmetal mines coincided with a significant spike in accident rates in these operations between 1997 and 2000. This spike in accidents began before state inspections ceased and peaked around 18 months after. Some of the increase in accidents resulted from incidents specific to one mine operator. The increase also coincided with a decline in federal regulatory activity, which is shown in Figure 2. Due to these factors, it is unclear whether stopping state inspections caused a temporary increase in the accident rate for metal/nonmetal mines. What is clear is the decline in accident rates since 2000, which has been sustained and substantial.

Accident rates in metal/nonmetal mines have always been higher than those in coal mines and sand and gravel mines. Some of this difference may be related to that fact that much more metal/nonmetal mining takes place underground, where more hazards may be present. As shown in Figure 3, accident rate trends for all mining types have declined over the period, but after 1997 the rate for metal/nonmetal mines declined by 57 percent, while the rate for coal mines and sand and gravel mines declined by only 29 percent. Metal/nonmetal mines have reduced accident rates faster, and have done so despite not being subject to state inspections.

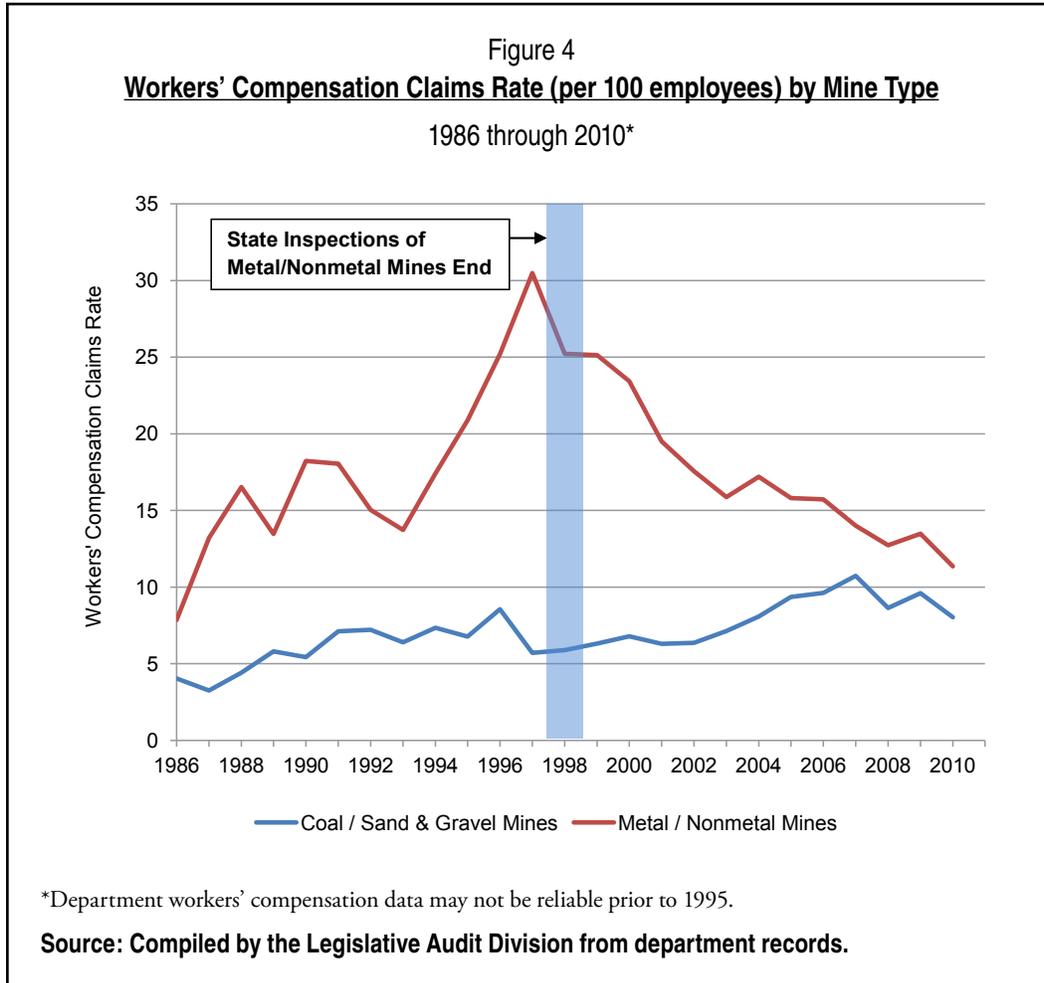
Accident Rates in Sand and Gravel Mines have Declined Faster than Rates in Coal Mines

To further test the effectiveness of state mine inspections, we analyzed data for accident rates in coal mines versus rates for sand and gravel mines. The main differences between these two types of mines relates to frequency and duration of state inspections; coal mines are subject to more frequent state inspections (once per quarter) and these inspections last longer, while sand and gravel mines are inspected less frequently (once a year at most) and the inspections are more brief.

Because coal mines are subject to more frequent state inspections, we would expect them to have a lower accident rate if these inspections are effective in improving workplace safety. However, since 1998, the accident rate for sand and gravel mines has declined much faster than the rate for coal mines (an 84 percent reduction for sand and gravel mines, versus a 5 percent increase for coal mines). Sand and gravel mines have become safer than coal mines over the past 10-15 years and this change has occurred despite the fact that coal mines are subject to more frequent state inspections.

Analysis of Workers' Compensation Claims Rates

Another way of measuring workplace health and safety is to look at workers' compensation insurance claims. We obtained data from the department showing the number of workers' compensation claims and reported benefits for the mining industry between 1986 and 2010. We used this data to identify whether specific employers operated coal mines and sand and gravel mine or metal/nonmetal mines. We then analyzed trends in the claims rates using mine industry employment data to calculate a claims rate. The following figure shows the trend in the number of workers' compensation claims per 100 employees for coal mines and sand and gravel mines versus metal/nonmetal mines.



Insurance Claims Rates for Noninspected Mines have Declined, but Rates in Inspected Mines have Increased

As shown in the figure, the number of claims per 100 employees in metal/nonmetal mines has declined by roughly half since the period when state inspections ceased. Over the same period the claims rate for coal mines and sand and gravel mines has actually increased slightly. The same trend is evident when analyzing workers' compensation benefit amounts adjusted for employment over the same period. Again, this is not a result we would expect to find if state inspections were effective in improving workplace health and safety in mines.

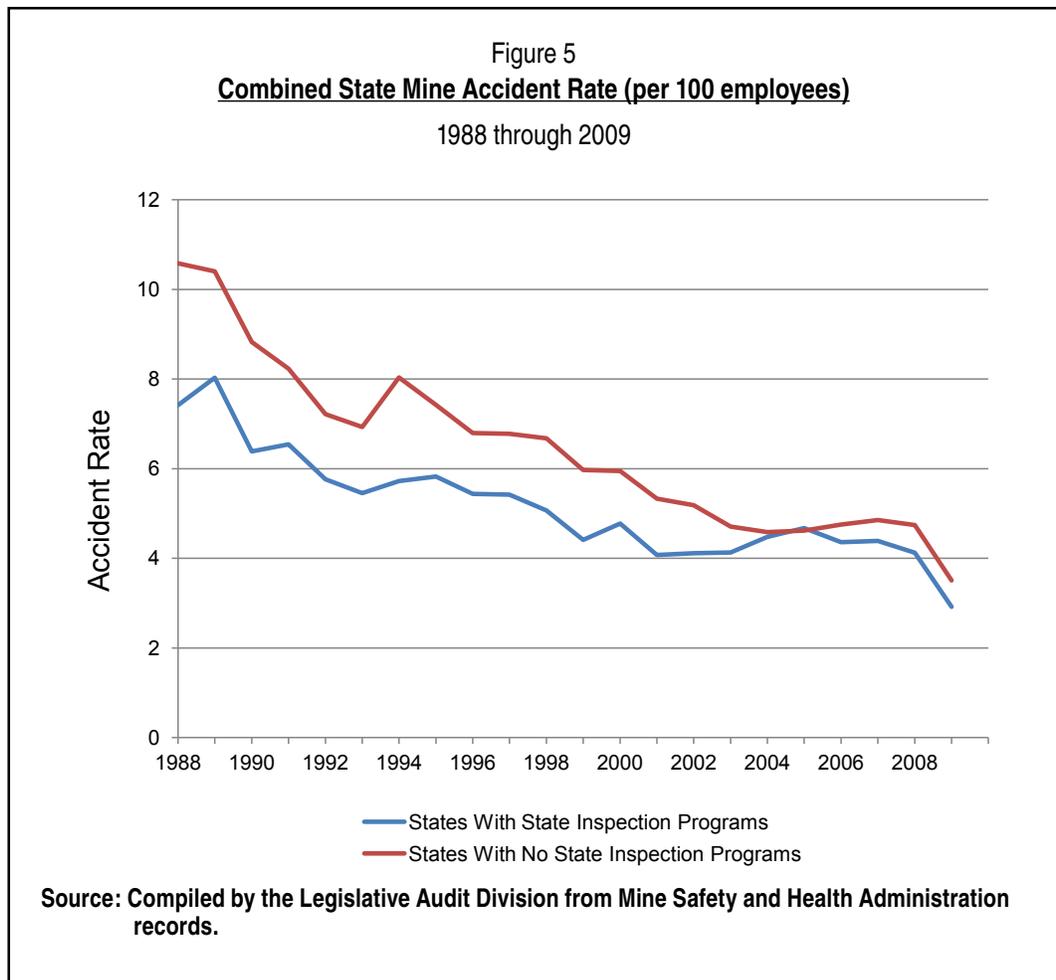
Inspections and Accident Rates in Other States

Audit work also included interviews with officials review of program information, and analysis of MSHA data from seven states in the Rocky Mountain region. Three states, Arizona, Wyoming and Nevada, have inspection programs for all their mines.

The remaining states, Idaho, Colorado, Utah and New Mexico, no longer inspect any mines, relying instead on inspections conducted by MSHA.

Differences in Accident Rate Trends for Rocky Mountain States

We used MSHA accident data in combination with employment data to calculate an annual accident rate for each state. The next figure shows the combined accident rates per 100 employees for the three states that conduct inspections versus the four states that do not. The period of analysis begins in 1988, when many states stopped their own inspections, and ends in 2009, which was the most recent complete year available for our analysis.



Over the past 20 years, states that do not conduct their own mine safety inspections have closed the gap in accident rates with the states that do conduct these inspections. Since 1988, the accident rate for states with no state inspection programs has declined by around 67 percent, compared with a 61 percent reduction for states that have their

own inspection programs. The accident rate is currently similar for states in both categories. States with inspections have a slightly lower accident rate, but given the variation in state-specific circumstances, different mine industry demographics etc., it is difficult to determine the extent to which this difference may be attributable to state inspections.

Effectiveness of State Mine Inspections

Almost 15 years have passed since the state of Montana stopped inspecting metal/nonmetal mines. Over this period, regular federal regulatory inspections of these mines have continued. Department inspections of coal mines and sand and gravel mines have also continued in conjunction with regular federal inspections. If additional state inspections of mines are effective, there should have been a significant and continuing divergence in key measures of workplace health and safety between metal/nonmetal mines and coal and sand and gravel mines. Instead, metal/nonmetal mines have gradually improved workplace health and safety when compared with other mines.

Analysis Controlled for Different Factors Relating to Safety

Because we relied on MSHA accident data as a key measure workplace safety, we performed additional testing of Montana mine accident records to control for the effects of different factors. This included detailed analysis of trends by controlling for the effects of accidents in specific mines, accident severity, number of employees, production intensity, type of material mined, and whether mine operations occurred underground or in surface facilities. We did detect some deviations from the reported trends for very small mine operations (less than 10 regular employees), but this result was inconclusive in the context of our overall findings.

Available Data Does Not Support the Effectiveness of State Inspections

Available federal and state mine safety data indicates that continuing duplicative state inspections of mines is not effective. In line with general industry trends, Montana's metal/nonmetal mines have gradually improved their safety records. Montana's experience with metal/nonmetal mines mirrors that of some other regional states that have stopped inspecting mines. These states have gradually improved mine safety to the point where there is a negligible difference when compared with states that still conduct their own inspections.

CONCLUSION

There is limited evidence that state mine inspections have resulted in measurable improvements in workplace health and safety in the state's mining industry.

Department Should Seek Revisions to Mine Safety Statutes

The department currently expends approximately \$600,000 annually for mine safety programs. We conducted analysis of program workloads and costs and estimate that department spends around \$110,000 annually for inspections. State inspections also require time and effort (and associated costs) on the part of mine operators, which are more difficult to quantify. If the department were to cease regular state mine safety inspections, resources could be used more efficiently in other areas. Given the lack of evidence of the effectiveness of regular state inspections, the department could realize greater value by redirecting its resources to other areas.

Statute currently requires the department to conduct a minimum number of inspections of the state's coal mines, and provides the authority to inspect sand and gravel mines (without any guidance on frequency). The department has used its discretionary authority relative to sand and gravel mines and already appears to be reducing inspection efforts in this area. But under current statute the department has no ability to reduce the number of coal mine inspections or take other actions to address its regulatory role.

Under the 1997 changes made to its statutory authority relating to metal/nonmetal mines, the department retained inspection authority, but cannot conduct inspections when federal regulatory programs are being administered and enforced. These provisions recognized that state programs should not duplicate ongoing MSHA inspections when effective federal regulations are in place. To eliminate duplication of federal inspections, similar provisions could be applied to coal mines and sand and gravel mines. To ensure the most efficient use of public resources, the department should seek revisions to mine safety inspection statutes to ensure its regulatory activities protect workplace health and safety in mines, while not duplicating existing federal regulatory efforts.

RECOMMENDATION #1

We recommend the department seek revisions to statute to redefine its regulatory role in mine safety and ensure state programs do not duplicate existing federal regulatory efforts.

Chapter III – Mine Safety Training

Introduction

Mining is one of only a few industries where the federal government mandates specific safety training for workers on a regular basis. States have traditionally played an important role in providing this training to the mining industry and in Montana, the Department of Labor and Industry (the department) operates a program offering mine safety training. Department mine safety training is provided to mine operators or individual miners free of charge, but alternatives do exist; mine operators can provide their own training programs, or use private providers offering these services.

Federal Regulations on Mine Safety Training

Federal regulations administered by the Mine Safety and Health Administration (MSHA) establish requirements for mine safety training. Training is mandatory for all employees and contractors working in mines. New employees/contractors must attend training for a specified number of hours (dependent on whether the mine is a surface or underground facility), and are not allowed to work in a mine before they complete this requirement. Additionally, all mine workers/contractors must attend an annual refresher course to ensure their knowledge of safety requirements is updated regularly. Mine operators and their contractors are also required to pay their employees during the time they attend training and cannot require attendance outside of normal paid work hours. Training needs to be conducted by skilled and knowledgeable individuals who have met MSHA mine safety training certification standards.

Mine safety training is intended to equip mine workers and contractors for employment in workplaces that are inherently hazardous. The training needs to be extensive and specific to different working environments. Our audit work involved review of the department's mine safety training program to determine whether it is operated on a financially sustainable and cost-effective basis. The following sections discuss our audit findings and recommendations relating to mine safety training.

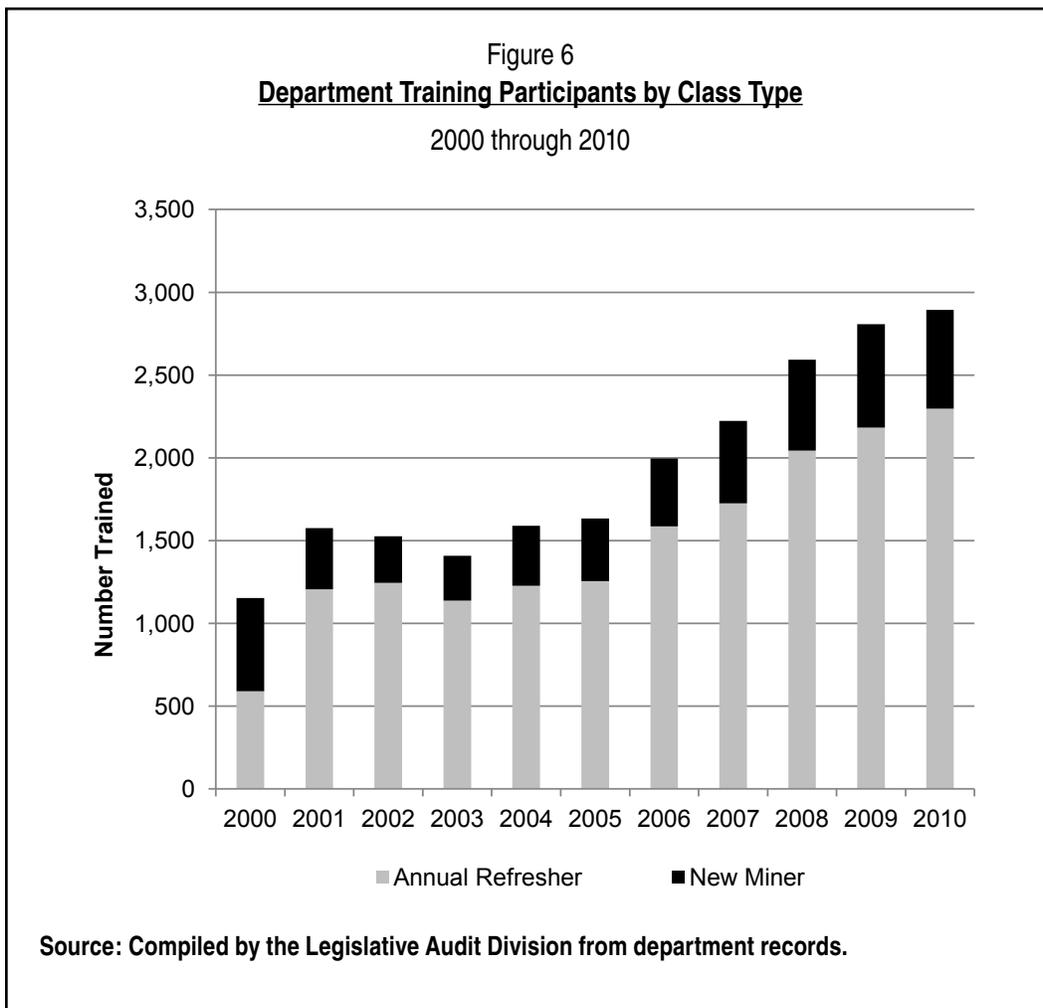
Trends in Mine Safety Training Activities

The level of activity in the department's mine safety training program depends, to a large extent, on the number of mines operating in the state and the number of people they employ. The program has to adjust its training provision in line with cyclical fluctuations in mining industry employment. The department offers mine safety training on an as needed basis i.e., mine owners/operators, mine industry contractors or other interested parties contact the department with training requests, which are addressed as resources allow. For a lot of established mine operations, this means

regularly scheduled training for new miners and annual refresher classes at set times throughout the year (a lot of training takes place during the winter months when some mine activities are curtailed by weather). However, the department also maintains the ability to provide training on an as needed basis and can generally accommodate requests for immediate training of new employees, where these are necessary to start or keep mines operating.

Demand for Training Services has Increased Significantly

Demand for department training has increased significantly in recent years as mine industry employment in Montana has risen. The following figure shows the trend in the number of department mine safety training participants between 2000 and 2010 and breaks out the total according to class type (new miner training or annual refresher classes).



Since 2003, demand for department mine safety training more than doubled as a cyclical upswing in mine industry employment spread across the state. In 2010, almost 2,900 individuals received training through the program. As shown, most mine safety training participation is for annual refresher classes, but a growing proportion of trainees are attending new miner classes. The department currently provides around 200 classes annually at locations all around the state.

Long-Term Financial Sustainability of Training Program is Unclear

Until 2011, demand for training services had increased in every year and the department was able to continue providing services while controlling costs associated with the program. Since fiscal year 2005, mine safety training hours logged by department employees have increased by almost 100 percent, but the hourly cost associated with providing these services has declined from around \$470 to \$380 (a 20 percent reduction). Despite increased training activity the department continues to offer training mostly on an on-demand basis and with very minimal costs to participants. Faced with the possibility of stagnant federal funding for mine safety and competition for state funding with other regulatory activities, the long-term financial sustainability of the training program is unclear. Our audit work identified opportunities for the department to revise some aspects of its training program to maximize efficiency, and meet long-term challenges with funding these activities.

CONCLUSION

Revisions could help maintain the cost-effectiveness of mine safety training programs, but achieving longer-term financial sustainability will be more challenging.

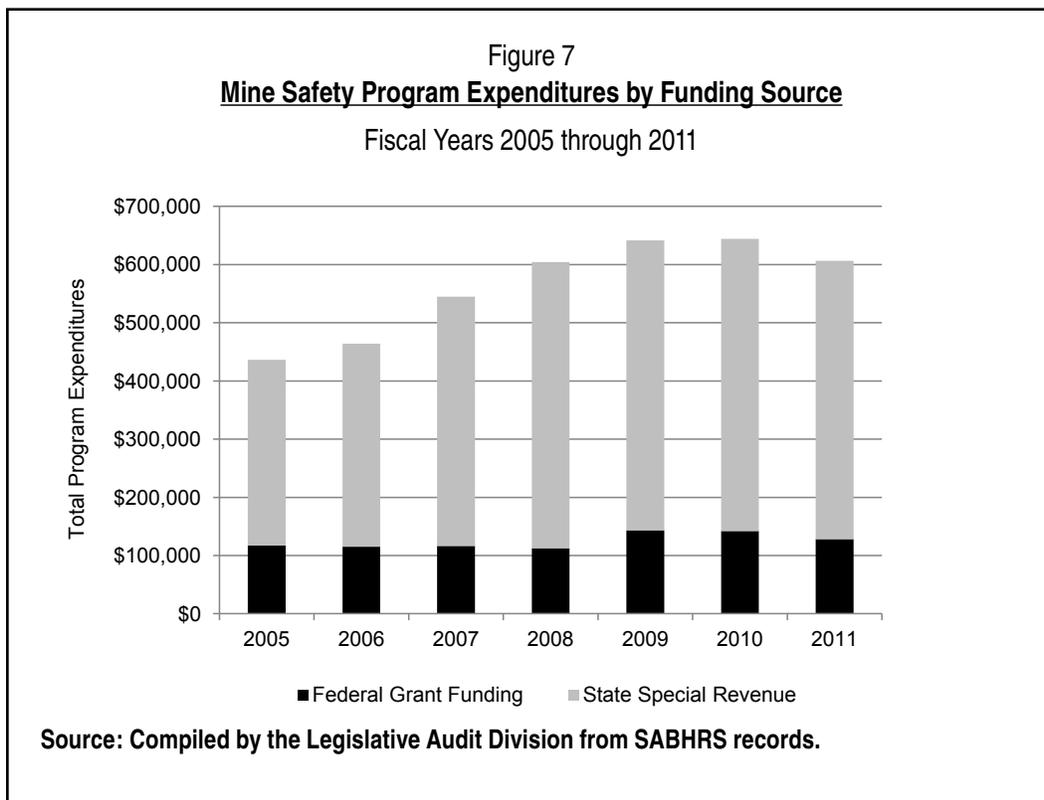
The following sections address two issues relating to the mine safety training program; addressing the financial sustainability of training programs and revising scheduling of training classes.

Long-term Financial Sustainability of Training Programs

Montana's mine safety program relies on two funding sources: MSHA grant monies and state special revenue from the Workers' Compensation Administration Fund (funded through assessments paid by employers). Because federal funding has essentially remained static over recent years and program expenses have increased, the share of the workers' compensation administration fund devoted to mine safety training has also increased. Although the mining industry provides resources for the fund through assessments on premiums or paid losses, these increasingly are not sufficient to cover the cost of providing training as a free service.

Static Federal Funding Results in Increasing Pressure on State Revenues

The mine safety program expended approximately \$606,000 in fiscal year 2011. Around 20 percent of program expenditures are typically funded from the federal grant. Since fiscal year 2005, total program expenditures have increased in most years for an overall increase of 39 percent. Over the same period, expenditures from federal sources have risen by only 9 percent. The trend in program expenditures and related funding sources is illustrated in the following figure.



Although there have been modest increases in federal grant funding allocated to Montana for mine safety purposes, these increases have not kept up with rising program costs. Discussions with department staff indicate that it is unlikely there will be significant increases in federal mine safety grants in the near future.

As federal funding has declined in real terms over recent years, the mine safety program has relied more on the Workers' Compensation Administration Fund for program revenue. All employers who pay premiums for workers' compensation insurance coverage or self-insure pay into this fund, which is used to cover the department's costs for a wide range of regulatory activities associated with workers' compensation and workplace safety. The mining industry also pays into the fund, some of which is used

to cover the cost of mine safety training provided for its employees free of charge. We analyzed the mining industry's share of mine safety training costs as compared to the contributions it makes to the program funding source to determine whether industry assessments cover the cost of training services. The following table summarizes industry training costs and workers' compensation fund assessments between fiscal years 2008 and 2011.

Table 3
Mining Industry Training Costs and Funding

Fiscal Years 2008 through 2011

	FY 2008	FY 2009	FY 2010	FY 2011	2008-2011
Mining Industry Training Costs	\$195,632	\$186,488	\$223,530	\$242,563	\$848,212
Mining Industry Workers' Compensation Fund Assessments	\$187,829	\$248,098	\$143,353	\$172,624	\$751,904
Difference Between Industry Training Costs and Funding	(\$7,802)	\$61,609	(\$80,177)	(\$69,939)	(\$96,309)

Source: Compiled by the Legislative Audit Division from SABHRS and department records.

Mining industry training costs were calculated based on actual training participation by employers identified as mine owners/operators. The workers' compensation fund assessment amount was sourced from department records identifying fund assessments by industry to include mining companies paying workers' compensation premiums or self-insuring. Although mining industry contributions to the training program funding source sometimes exceeded actual costs, they have generally not been sufficient to cover all costs (this analysis also assumes that the entire amount contributed by the industry is available only for mine safety training and is not used to cover any of the other regulatory costs associated with the workers' compensation insurance system). As shown, over the past four fiscal years, the funding shortfall has been close to \$100,000.

Financial Sustainability Options for Mine Safety Training

Based on our review of mine safety training activities here and in other states, we identified several options that could be considered to address financial sustainability. These options could include ending state provision of mine safety training, providing the training through the state's community college system, or charging fees for participation. The following sections discuss the identified options.

Ending State Provision of Mine Safety Training

Under current statute the department is not required to provide mine safety training. The department's training program is administratively created and authorized through

appropriations from state and federal revenue sources. The department could, therefore, stop providing the training, making this a responsibility of the mining industry. Review of program records shows that some mine operators already provide training themselves or contract in the private sector for its provision. In 2010, department training courses were attended by approximately 3,000 individuals, or three quarters of all mine industry employees in the state. MSHA training requirements are mandatory, so the remaining mine industry employees must be receiving it from other sources.

Ending state provision of mine safety training would likely impact small mine operations and service contractors disproportionately, as these employers may not have the resources to implement their own training programs or contract for the services. Ending state provision could affect the department's ability to apply for and receive federal grant funding to support program efforts. Currently, nearly every state in the country participates in the federal grant program and maintains some level of involvement in mine safety training. However, given the lack of a statutory basis for existing mine safety training programs, ending state provision of this service is an option that would be available to the department.

Contracting for Training Provision through Community Colleges

Another approach to state provision of mine safety training is to administer the programs through community or technical colleges, rather than through an executive branch agency. Among the Rocky Mountain states we included as part of our audit work, both Wyoming and Utah provide mine safety training through community or technical colleges. These states are still able to qualify for the available federal funding, but this is provided to community or technical colleges and used to defray costs associated with training provision. Because state revenue sources are not used to support these programs, the community or technical colleges charge course fees on a per participant basis to cover costs. Under this training provision option, the department could contract with the Montana University System, which would receive federal grant funding, but also charge course fees. The lack of supplementary state revenues would likely mean fees would need to be set at a level that would fully cover costs, so per participant fees would be in the \$50-\$150 range (based on available information from other states). Higher costs and more limited geographic availability in fixed locations (community colleges) may, however, affect the ability of some mine operators and service contractors to participate in training programs.

Charging Nominal per Participant Fees

Several other states in the Rocky Mountain region have taken steps to diversify the funding sources available for mine safety programs by adopting fees for training

provision. Four states (Arizona, Wyoming, New Mexico, and Utah) have adopted per participant fees for providing mine safety training. Arizona and New Mexico provide the training on the same basis as Montana (through executive branch agency of state government), but charge nominal fees designed to supplement other federal and state funds.

Under this option, the department would continue to provide training through its own program, but state and federal revenues would be supplemented with fees paid by participants. By charging nominal per participant fees for mine safety training of \$15 for the annual refresher course and \$25 for new miner training (similar to amounts seen in other states), the department could provide an additional \$40,000 annually to help cover program costs and offset the decline in federal revenues. However, the department may currently lack the necessary statutory authority to charge fees for mine safety training services.

Department Should Address Financial Sustainability Options

Mine operators and their contractors are subject to stringent regulatory requirements, including mandatory training of workers. Because of these responsibilities and the availability of federal grant funds to defray costs, the department has traditionally been unwilling to attach any cost to mine safety training. Montana's Mine Safety program has made some changes to shift costs towards training participants by requiring attendees at first aid training to purchase their own class materials. The Montana program has also discontinued the practice of providing training participants with free reference materials covering MSHA mining regulations and other subjects. However, without more cost-shifting towards training participants, the department will have to either divert resources away from other regulatory activities or increase the rate at which assessments are made against all businesses covered by workers' compensation.

To ensure the ongoing financial sustainability of mine safety training programs, the department should review all available options and take steps to adjust the basis for funding these activities. This could include ending state provision of mine safety training, contracting with the state university system to provide the services, charging nominal participation fees for training, or other available options. Where necessary, the department should seek revisions to statute to provide the necessary authority for these activities.

RECOMMENDATION #2

We recommend the department review available options and take necessary actions to address the financial sustainability of its mine safety training program.

Review of Training Records Identified Inefficiencies in Class Scheduling

Audit work involved reviewing mine safety training records showing the types of classes provided on specific dates and the number of participants in each class. Under the department's on-demand approach to training provision, mine operators or their contractors can contact the department and request training of a specific type, at specific locations and specific times. The department's training staff reviews these requests and schedules training events based on availability, locations, and other workload.

Although most training classes average between 10-15 participants, during review of training records for 2010 we identified several incidences where mine safety training was provided for a single individual or a limited number of individuals in one class. Mine safety training costs approximately \$380 per hour of classroom instruction, so the average 8-hour class costs the department around \$3,000. Providing a training class for a single participant or a very limited number of participants rather than pooling/combining participants in larger classes is not cost-effective.

Advance Scheduling of Some Training Classes Would Improve Program Cost-Effectiveness

Many department training classes are scheduled in advance with mine operators and have a large number of participants (this is especially true for some mine operators and some types of classes). Scheduling classes in advance increases participation and reduces the per-participant cost. Review of training programs in other states has identified examples of where training is scheduled for set times and locations throughout the year. For example, the State of Nevada Mine Safety and Training Section schedules training classes at regular intervals throughout the year in locations around the state. The New Mexico Bureau of Mine Safety also provides training on a pre-scheduled basis at different sites around the state (including at specific mines), and establishes a minimum participation level for classes.

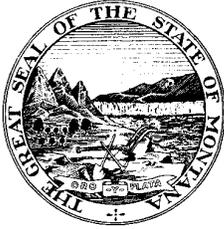
The department relies exclusively on direct contact from mine operators and contractors when developing training schedules, rather than establishing pre-scheduled training events that participants can sign-up for in advance. During discussion about training scheduling, department staff emphasized the need to keep offering nongeneric on-site training that provides content tailored to specific circumstances. This can and should continue, but in addition to providing site-specific and on-demand mine safety training, the department should establish and publicize the availability of pre-scheduled training opportunities in different locations around the state. This would help avoid excessive and unnecessary costs associated with low participation training classes and maintain the cost-effectiveness of the program as a whole.

RECOMMENDATION #3

We recommend the department ensure class sizes and scheduling provide for cost-effective delivery of mine safety training services.

DEPARTMENT OF LABOR
AND INDUSTRY

DEPARTMENT RESPONSE



Montana
Department of Labor and Industry
Commissioner's Office

A-1

BRIAN SCHWEITZER, GOVERNOR
KEITH KELLY, COMMISSIONER

January 25, 2012

RECEIVED

JAN 25 2012

LEGISLATIVE AUDIT DIV.

Tori Hunthausen, CPA
Legislative Auditor
State Capitol Building
P.O. Box 201705
Helena MT 59620-1705

RE: Mine Safety Program, performance audit recommendations

Dear Ms. Hunthausen:

On behalf of the Department of Labor and Industry, thank you for this opportunity to provide a response to you and the Legislative Audit Committee regarding the recent performance audit of the Department's Mine Safety Program. The Department appreciates the professionalism exhibited by the Legislative Audit Division staff throughout the course of the audit. While the Department respectfully disagrees with some of the conclusions contained in the audit report, the Department is pleased to concur in all of the recommendations made by the audit report.

Audit recommendation # 1

We recommend the department seek revisions to statute to redefine its regulatory role in mine safety and ensure state programs do not duplicate existing federal regulatory efforts.

Agency response #1

Concur: The Department of Labor and Industry will request legislation to reduce the number of required inspections conducted by the Department, while maintaining the Department's authority to inspect Montana mines as needed. The Department agrees that the increasing its flexibility regarding the frequency and timing of mine inspections will minimize the overlap of efforts with federal inspections, while not ceding state authority to conduct appropriate inspections of Montana mines. The Department believes that it will be able to continue to provide effective site-specific mine safety training to Montana mining operations with a reduction in the number of required inspections.

Audit recommendation # 2

We recommend the department review available options and take necessary actions to address the financial sustainability of its mine safety training program.

Tori Hunthausen, CPA

January 25, 2012

page 2

Agency response #2

Concur: The Department of Labor and Industry will review various options to ensure the financial sustainability of its mine safety training. The review will include efforts to increase efficiency while maintaining quality, and clarifying the Department's authority to charge nominal fees for training classes and/or classroom materials. If appropriate, the Department will request legislation to allow it to charge such fees.

Audit recommendation # 3

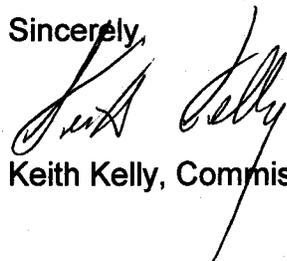
We recommend the department ensure class sizes and scheduling provide for cost-effective delivery of mine safety training services.

Agency response #3

Concur: The Department of Labor and Industry will promptly establish minimum class sizes for mine safety training. By not later than the end of April 2012, the Department will have posted an online schedule of upcoming mine safety training classes. The Department notes that while it will establish a minimum class size for sign-up purposes, there may be occasions where due to weather and road conditions, or other reasons outside of the control of the Department, the actual attendance at a training session may occasionally be lower than the minimum, due to "no-shows" by persons registered to attend a particular session.

The Department looks forward to meeting with the Legislative Audit Committee on February 8, 2012, regarding the audit recommendations.

Sincerely,



Keith Kelly, Commissioner