

## **FREE MARKETS, INDIVIDUAL LIBERTIES AND SAFE COAL MINES: A POST-SAGO PERSPECTIVE**

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I.	DISASTERS AND STORMS .....	77
II.	SAFETY AND RISK .....	79
III.	SAFETY AND FREE MARKETS .....	82
IV.	GOVERNMENT AND INFORMATION .....	84
V.	PERCEPTION AND REALITY .....	85
VI.	PREFERENCES AND PAY .....	86
VII.	COMMAND AND CONTROL .....	87
VIII.	SAFETY AND COMPLIANCE .....	88
IX.	FORCED-COMPLIANCE AND FREE MARKETS .....	91
	A. <i>Rules Versus Results</i> .....	92
	1. Generic Means Uninformative .....	93
	2. Specific Means Restrictive .....	95
	B. <i>Inspections Versus Audits</i> .....	98
	C. <i>Punishment Versus Cooperation</i> .....	100
	1. Unmeasured Means Ineffective .....	101
	2. Subjective Means Unpredictable .....	103
	3. Adversarial Means Uninformed .....	106
X.	FORCED-COMPLIANCE AND SCARCE RESOURCES .....	108
	A. <i>Uncertain Benefits</i> .....	109
	B. <i>Certain Costs</i> .....	112
	C. <i>Negative Net Value</i> .....	114
XI.	CONCLUSION .....	116

This symposium was organized following the deaths of twelve West Virginia coal miners at the Sago mine on January 2, 2006. The stated goal of the symposium is “to explore and stimulate new ways of examining and solving a very old problem—the challenge of providing the safest possible workplace

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for American coal miners.<sup>1</sup> It is certainly a laudable goal. The loss of human life at Sago, and at other mines in the United States and throughout the world, is tragic.

Because the symposium was organized by the *West Virginia Law Review*, its focus is, not surprisingly, on legal solutions to the perceived problem of coal mine safety. In Part II of the symposium, seven of the eight presenters were lawyers. In Part I of the symposium, four of the six presenters were lawyers.

Obviously, lawyers play an essential role in a society based on the rule of law. But lawyers approach problems very differently than economists, actuaries, statisticians, loss control specialists, risk managers, safety professionals, and mining professionals. Legal solutions, which are often centered on creating rights and imposing obligations, are not well suited for every type of problem.

To a large extent, the agenda for the symposium replicated the non-multidisciplinary approach taken by Congress in 1969 with the passage of the Coal Act, in 1977 with the passage of the Mine Act and in 2006 with the passage of the MINER Act. In all three instances, Congress looked for and implemented legal solutions to perceived mine safety problems without much, if any, consideration of alternative approaches.<sup>2</sup>

To its credit, however, the *West Virginia Law Review* posed the question of whether the problem of coal mine safety is one that can be solved by laws that are written by lawyers. The title of the symposium, *Thinking Outside the Box*, is an unambiguous invitation to reevaluate the “safety through laws” paradigm that has prevailed in the United States for over thirty-five years.

It is my view,<sup>3</sup> based on my professional experience and political perspective,<sup>4</sup> that the current method of using the federal government’s authority to force compliance with regulations is a misguided way to attempt to improve coal mine safety.<sup>5</sup> While the intentions of the highly credentialed lawyers, aca-

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<sup>1</sup> Anne Marie Lofaso, *Approaching Coal Mine Safety from a Comparative Law and Interdisciplinary Perspective*, 111 W.VA. L. REV. 1, at 2 (2008).

<sup>2</sup> The notable exception was the Mine Safety Tax Relief Act of 2006 proposed by Senator Rockefeller (D. W. Va.), which created tax incentives for investment in mine safety. Press Release, Senator Jay Rockefeller, Rockefeller Wins Victory on Mine Safety (Feb. 2, 2006), <http://web.archive.org/web/20060208045745/rockefeller.senate.gov/news/2006/pr020206a.html>.

<sup>3</sup> The views stated in this article are my personal views. I have not been compensated, in any way whatsoever, to advocate a free market approach to mine safety. The views contained herein do not represent the views of any of my current or former clients.

<sup>4</sup> I am an attorney that represents mine operators in disputes with the Mine Safety and Health Administration (MSHA) that arise under the Mine Act. Politically, I aspire to the principles of the American Revolution—individual liberty, limited government, the free market, and the rule of law.

<sup>5</sup> I have previously committed these views to writing in a policy analysis published by the CATO Institute. See generally C. Gregory Ruffennach, *Saving Lives or Wasting Resources? The Federal Mine Safety and Health Act*, 453 POL’Y ANALYSIS, CATO INSTITUTE (2002), available at <http://www.cato.org/pubs/pas/pa453.pdf>.

demicians and government officials that are trying to use the forced-compliance model to make mines safer are beyond reproach, they, like their predecessors in 1969 and 1977, are destined to failure. As the Sago mine disaster exemplifies, the forced-compliance approach to mine safety is inherently flawed and interferes with many of the free market incentives that actually make mines safer.

### I. DISASTERS AND STORMS

It is fair to say that any loss of human life is problematic. In this respect, because about thirty people die each year in the nation's coal mines, there is a "problem." Every single loss of life is a personal tragedy for the family, friends, and co-workers of the victim. The "problem" will exist until there are zero coal mining fatalities.<sup>6</sup>

While the coal mining industry in the United States has not yet achieved zero fatalities, it is important to put the so-called coal mine safety "problem" into perspective. Obviously, coal mining is not a leading cause of death in the United States. For example, on one weekend in June of 2008, thirty people on the East Coast died from heat-related illnesses in their own homes.<sup>7</sup>

Coal mining is not even the most dangerous occupation in the United States. For example, in terms of raw numbers, 957 truck drivers died on the job in 2006.<sup>8</sup> The most dangerous occupation on a rated basis is commercial fishing, which has a fatality rate over three times greater than coal mining.<sup>9</sup> In 2006, the worst year of the decade in terms of coal mining fatalities, the rate at which coal miners died on the job was a little more than the fatality rate for garbage collectors and a little less than the fatality rate for iron workers.<sup>10</sup>

Although coal mining is one of the more dangerous occupations in terms of fatal injuries, variation in fatality rates among different industries is not problematic in and of itself. Certainly, no one expects mining coal to be as safe as working at Wal-Mart.<sup>11</sup> Wal-Mart employees have the inherent advantage of working in geologically and atmospherically stable conditions that are above

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<sup>6</sup> See, e.g., CONSOL ENERGY, 2007 ANNUAL REPORT 5-6, available at [http://media.corporate-ir.net/media\\_files/irol/66/66439/CONSOLAR07.pdf](http://media.corporate-ir.net/media_files/irol/66/66439/CONSOLAR07.pdf) ("We also began our "Absolute Zero" initiative. More than just a new safety slogan, the initiative is a complete restructuring of the way we manage safety in the company, and a change in the way we think about safety as well.").

<sup>7</sup> Posting of Jason Samenow, *East Coast Heat Wave Death Toll Over 30* to [http://blog.washingtonpost.com/capitalweathergang/2008/06/east\\_coast\\_heat\\_wave\\_killed\\_30.html](http://blog.washingtonpost.com/capitalweathergang/2008/06/east_coast_heat_wave_killed_30.html) (June 13, 2008, 10:45 EST).

<sup>8</sup> BUREAU OF LABOR STATISTICS, U.S. DEP'T OF LABOR, FATAL OCCUPATIONAL INJURIES, EMPLOYMENT, & RATES OF FATAL OCCUPATIONAL INJURIES BY SELECTED WORKER CHARACTERISTICS, OCCUPATIONS, & INDUSTRIES (2006), available at [http://www.bls.gov/iif/oshwc/foi/CFOI\\_Rates\\_2006.pdf](http://www.bls.gov/iif/oshwc/foi/CFOI_Rates_2006.pdf) (driver/sales workers and truck drivers).

<sup>9</sup> *Id.* (Coal mining fatality rate 49.5; Fishing and related fishing worker fatality rate 147.2).

<sup>10</sup> *Id.* (Structural iron and steel workers fatality rate 61; coal mining fatality rate 49.5; refuse and recyclable material collectors fatality rate 40).

<sup>11</sup> *Id.* (Retail store workers have a fatality rate of 1.8.).

ground; whereas underground coal miners will never have that luxury, no matter how many laws are enacted by Congress.

In this respect, the differences in safety between occupations is not relevant from a public policy perspective. While the egalitarian view does have its advocates,<sup>12</sup> it defies common sense to believe, much less strive toward, making all workplaces equal in terms of risk. Driving trucks across frozen lakes and harvesting crabs from the Bering Sea will always be more inherently dangerous than the office work performed by lawyers and professors.<sup>13</sup> Thus, emphasizing that coal mining is more dangerous than other occupations is an essentially meaningless observation that is not indicative of a “problem.”

There might be a “problem” if coal mining was getting less safe over time. In this regard, the public perception in 2006, after the twelve miners were killed at the Sago mine, was that coal mines were becoming more dangerous. However, the perception was largely influenced by the fact that the Sago disaster occurred on January 2, 2006. From a statistics perspective, the Sago mine disaster would have been expected to occur in 2005, which happened to be the safest year ever in the United States in terms of coal mining fatalities.<sup>14</sup> Had the Sago disaster occurred just three days earlier in calendar year 2005, the trend, in terms of absolute coal mining fatalities, would be largely intact.<sup>15</sup> And when compared to recent increases in U.S. coal production to meet the growing worldwide demand for fossil fuels, the trend is certainly still toward safer coal mines on a fatality per million ton basis.<sup>16</sup>

In addition to its occurrence in the wrong calendar year, the Sago mine disaster was perceived as evidence of a “problem” due to two other factors. First, a large number of miners died at one time. In this respect, mine disasters are similar to train wrecks and airplane crashes in that they are stark reminders of the fragility and vulnerability of human life. However, the loss of multiple lives, by itself, is not always enough to motivate lawmakers to make laws. For

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<sup>12</sup> See, e.g., AFL-CIO, THE STATE OF WORKERS’ SAFETY AND HEALTH 1-2 (2008), available at [http://www.aflcio.org/issues/safety/memorial/upload/\\_02.pdf](http://www.aflcio.org/issues/safety/memorial/upload/_02.pdf) (“Unfortunately, as demonstrated by the Sago mine disaster and other recent coal disasters, too many workers remain at risk, and face death, injury or disease as a result of their jobs. . . . The nation is falling further and further behind in achieving the promise of safe jobs for America’s workers.”).

<sup>13</sup> BUREAU OF LABOR STATISTICS, *supra* note 8. (Professional and related occupations 0.9).

<sup>14</sup> There were twenty-three coal mine fatalities in calendar year 2005. MINE SAFETY & HEALTH ADMIN., U.S. DEP’T OF LABOR, COAL FATALITIES BY STATE (2008), <http://www.msha.gov/stats/charts/coalbystate.asp>.

<sup>15</sup> *Id.* Annual coal mining fatalities if the Sago mine disaster had occurred on December 31, 2005: 2000 (38), 2001 (42), 2002 (27), 2003 (30), 2004 (28), 2005 (35), 2006 (35), 2007 (34). (author moved 12 fatalities from 2006 to 2005).

<sup>16</sup> U.S. Coal Production in million short tons: 2003 (1071), 2004 (1112), 2005 (1131), 2006 (1162), 2007 (1145). FRED FREME, ENERGY INFO. ADMIN., U.S. COAL SUPPLY & DEMAND: 2007 REVIEW (2008), available at <http://www.eia.doe.gov/cneaf/coal/page/special/feature.html>; see also Ruffennach, *supra* note 5 at 17, Fig. 7.

example, Congress did not amend the Mine Act following the Jim Walters mine disaster in 2001, even though thirteen miners were killed.<sup>17</sup>

The second, and more important, component of the Sago mine disaster is that it played out in national news over a long period of time. The Sago tragedy, like the Quecreek mine rescue in 1998, was the leading news story for over one week. However, unlike Quecreek, the rescue attempt at the Sago mine was largely unsuccessful, leaving the public with twelve tragedies and only one miracle.<sup>18</sup> Worse, the media accounts of the disaster gave the public false hope in the final hours.<sup>19</sup> Neither American society nor its lawmakers were accustomed to seeing industrial accidents of this magnitude end so terribly.

Thus, on the most fundamental level, the “problem” being examined by the symposium is in large part a perfect storm of an anomalous statistical event, a traumatic mass death and a dramatic media portrayal. The storm analogy is especially appropriate in light of the fact that the trigger of the Sago mine disaster was lightning resulting from a statistically rare winter thunderstorm.<sup>20</sup>

## II. SAFETY AND RISK

The lightning storm on January 2, 2006, ignited methane gas that had accumulated in abandoned areas of the Sago mine. Methane is a known risk of coal mining. Exposed coal liberates methane. Methane is highly explosive when the methane to air ratio is between five to fifteen percent.<sup>21</sup> Methane ignitions can generate tremendous explosive forces, particularly when there is coal dust available to fuel the explosion.

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<sup>17</sup> See generally MINE SAFETY & HEALTH ADMIN. COAL MINE SAFETY AND HEALTH, No. 01-01322, REPORT OF INVESTIGATION: FATAL UNDERGROUND COAL MINE EXPLOSIONS, JIM WALTER RESOURCES, INC. (2002), available at <http://www.msha.gov/fatals/2001/jwr5/ftl01c2032light.pdf>.

<sup>18</sup> Seventeen miners escaped the explosion. Craig Newsome, et al, *Letter from Sago Miners*, DOMINION POST, Feb. 3, 2006, at A1. (“You see there was not one survivor of the explosion but seventeen (17). The “One Left” crew was in direct line of the explosion within 1,000 feet but none of them were seriously injured by the blast. Why????? Well, we will tell you why. It was because the area of the mine was so well rock dusted and maintained that the explosion did not propagate at all. When it ran out of methane it stopped.”)

<sup>19</sup> David Conti, *Families, Friends Rejoice at Church*, PITTSBURGH TRIBUNE-REV., Jan. 4, 2006, available at [http://www.pittsburghlive.com/x/pittsburghtrib/s\\_410173.html](http://www.pittsburghlive.com/x/pittsburghtrib/s_410173.html) (Families were incorrectly told that the trapped miners were alive, when in fact only one of the miners survived).

<sup>20</sup> MINE SAFETY AND HEALTH ADMINISTRATION, SUMMARY OF INVESTIGATION, FATAL UNDERGROUND COAL MINE EXPLOSION: JANUARY 2, 2006, SAGO MINE 54, available at <http://www.msha.gov/Fatals/2006/Sago/Overview/SAGO%20InvestigationOverview.pps> (concluding that a “lightning strike over the sealed area indirectly energizing metallic objects within the sealed area” was the “most likely ignition source of the explosion.”).

<sup>21</sup> NAT'L INST. FOR OCCUPATIONAL SAFETY AND HEALTH, CENTERS FOR DISEASE CONTROL, FOCUS ON COAL MINING: SAFETY HAZARDS, HEALTH HAZARDS, MINE RESCUE, available at <http://www.cdc.gov/niosh/topics/minerescue/>.

In active working areas of coal mines, the risk presented by the methane is mitigated in a number of ways.<sup>22</sup> The risk is primarily mitigated by ventilation, which dilutes the methane and removes it from the mine. As mines get larger, they become somewhat more difficult to ventilate. Periodically, inactive mine areas are sealed off from the active mine with block walls. Methane is then permitted to accumulate in these areas. Usually, the methane in these areas accumulates in such great quantities that it is no longer explosive. The methane explosion at the Sago mine involved a methane ignition in an abandoned area that had been deliberately sealed off from the active mine.<sup>23</sup>

Methane explosions are just one of the many risks faced by coal miners. The short list of risks also includes roof and rock falls, inundation, fire, poisonous gases, high voltage electricity and hazards posed by large moving equipment. The risks are inherent and cannot be totally eliminated so long as humans are working underground.

Safety is only achieved by actively managing and controlling the risks. In a mine, the process of controlling and managing risk requires constant vigilance, not only 24/7 but also 60/60. Conditions in mines do not change quarterly,<sup>24</sup> but change by the second. Mine operators and miners have to constantly adjust to the changing conditions. They make hundreds of decisions each day that impact safety.<sup>25</sup>

In addition to taking place in real time, the process of managing risk takes place in the real world, where it is understood that safety is relative, not absolute. For example, in a fantasy world where resources were not finite, it would be possible to put new tires on mine haulage equipment everyday. New tires, which offer better traction and less opportunity for failure, provide maximum safety. However, mine operators do not put new tires on their mining vehicles at the start of each work shift, just like ordinary citizens do not put new tires on their cars before driving to work in the morning. Whether or not the wear on an existing tire warrants replacement depends not only on the extent and nature of the wear, but also the size and loads carried, the haul road surface, condition and profile, the length of the haul cycle, the vehicle speed, and the

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<sup>22</sup> *Id.*

<sup>23</sup> See MINE SAFETY & HEALTH ADMIN. COAL MINE SAFETY AND HEALTH, *Report of Investigation: Fatal Underground Coal Mine Explosions, Sago Mine*, at 195, available at <http://www.msha.gov/Fatals/2006/Sago/ftl06C1-12.pdf>.

<sup>24</sup> Under the Mine Act, there are four inspections of underground coal mines per year. 30 U.S.C. § 813 (2006).

<sup>25</sup> Carl Metzgar, *Three-hundred Ninety-nine to One*, PIT & QUARRY, March 1, 2006, available at <http://www.pitandquarry.com/pitandquarry/Safety/Three-hundred-ninety-nine-to-one/ArticleStandard/Article/detail/311551> ("It gets more daunting when the number of tasks at a mine is multiplied by the number of repetitions. The opportunity for the accumulation of little oversights to add up to a big failure is huge. But if the automobile experience is close to being correct, the industry's general success comes from a tremendous amount of individual effort by a lot of miners for each injury that is prevented.").

number and cycles per work shift.<sup>26</sup> Given all of the variables, reasonable persons can fairly disagree about the precise point at which wear on a tire becomes “unsafe.”<sup>27</sup> In this respect, safety is undeniably subjective.

The process of managing risk also involves complicated trade-offs. For example, new tires on a piece of mobile equipment might inadvertently embolden the equipment operator to operate the equipment at higher speeds thereby increasing the risk of a traffic accident.<sup>28</sup> Even if the new tires reduce the risk of traffic accidents overall, putting new tires on a piece of mobile equipment creates a new set of hazards for the maintenance crew that has to change the tires.<sup>29</sup> Reasonable persons can also disagree as to whether it is appropriate to substitute one risk for another risk.<sup>30</sup>

Not everyone is comfortable working in an environment in which risks have to be constantly managed. Miners are generally persons who have a higher than normal tolerance for risk, like the crab fisherman and ice road truckers whose jobs are acclaimed on television.<sup>31</sup> In this respect, miners are different than most lawyers, law professors, legislators, regulators, and judges who generally prefer work environments that present fewer physical hazards.

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<sup>26</sup> See Mark Robins, *Choosing the Correct Off-Road Tires*, ROCK PRODUCTS, Oct 1, 1998, available at [http://rockproducts.com/mag/rock\\_choosing\\_correct\\_offroad](http://rockproducts.com/mag/rock_choosing_correct_offroad).

<sup>27</sup> See, e.g., *Amax Coal West, Inc.*, 19 F.M.S.H.R.C. 1311, 1316 (1997) (“[T]he company’s witnesses are reasonably prudent men with more familiarity with the factual circumstances surrounding the hole in the tire than the inspector, particularly as the tire was being used at this mine, and that they properly did not recognize any hazard warranting corrective action.”); *Big Sky Coal Co.*, 20 F.M.S.H.R.C. 582, 587-89 (1998) (“[T]he Secretary did not prove a reasonably prudent person, familiar with the tire in question and the circumstances under which it was used at the Big Sky Mine, would have expected the tire to blowout. . . . What appears ‘terrible,’ may or may not be safe.”); *Triton Coal Co.*, 19 F.M.S.H.R.C. 1630, 1631 (1997) (“The parties disagree whether a tire on a 190 ton haulage truck affected safety.”); see also *Arch of West Virginia*, 28 F.M.S.H.R.C. 694, 697 (2006) (“Because there is a component of tire safety that is relative to their conditions of use, such factual matters may be relevant when determining whether the tires were unsafe.”).

<sup>28</sup> Carl R. Metzgar, *The Best Loss Control has a Downside*, PIT & QUARRY, July 8, 2008, available at <http://www.pitandquarry.com/pitandquarry/Safety/The-best-loss-control-has-a-downside/ArticleStandard/Article/detail/528675> (“There is a name for this phenomenon of taking more risk when hazards are reduced or a protective measure is introduced. Some authors call this risk compensation; others call it risk homeostasis.”).

<sup>29</sup> See generally MINE SAFETY AND HEALTH ADMIN., DEP’T OF LABOR, TIRE AND RIM SAFETY AWARENESS PROGRAM, available at <http://www.msha.gov/S&HINFO/IG60.PDF>; see also, *Peabody Coal Company*, 1 F.M.S.H.R.C. 1494 (1979) (fatal accident during tire changing).

<sup>30</sup> See *Rawl Sales & Processing Co.*, 23 F.M.S.H.R.C. 463, 466 (2001) (“Since I cannot discern what mining danger threatens miners at home in their beds, I will not support the Secretary’s gratuitous demand that Rawl order miners underground for several hours, who would otherwise be at home, to conduct an ‘on-shift’ examination to protect nobody from anything.”) (Commissioner Riley).

<sup>31</sup> See, e.g., *Ice Road Truckers*, <http://www.history.com/minisites/iceroadtruckers> (last visited Sept. 9, 2008); see also *Deadliest Catch*, <http://dsc.discovery.com/fansites/deadliestcatch/deadliestcatch.html> (last visited Sept. 9, 2008).

While the so-called risk preferences of individuals vary, to a large extent the variation is constrained by society's overall risk preferences. In general, a wealthy society, like the United States, will have a lower tolerance for workplace risk than a poorer one. For example, although China produces about twice as much coal as the United States,<sup>32</sup> the number of coal mining fatalities in China exceeds the United States by more than a factor of 100.<sup>33</sup> The incredible disparity in risk tolerances primarily reflects the very different standards of living in the two nations.<sup>34</sup>

### III. SAFETY AND FREE MARKETS

In the absence of government direction, the information about an individual's, and indirectly society's, risk preferences is conveyed through the free market. A free market exists anywhere there is a voluntary exchange of goods or services.<sup>35</sup> Free market theory does not make judgments about the participant's morality. The only assumption is that, in general, market participants will make decisions that are in their own self-interest. If the exchange is not a win-win, it will not take place. In coal mining, for example, miners exchange their labor for a wage paid by the mine operator.

The exchange between the miner and the mine operator reflects and affects the safety of the mine. Because coal mining is recognized as being more dangerous than working at Wal-Mart, coal miners demand additional compensation for the heightened risk of death.<sup>36</sup> If mine operators did not offer higher wages, a rational, self-interested worker would opt for the safer job working at Wal-Mart.<sup>37</sup> To minimize the risk premium paid to miners, a rational, self-interested mine operator will make investments to improve work place safety.<sup>38</sup>

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<sup>32</sup> David Barboza, *105 Dead After Explosion in China Mining Region*, N.Y. TIMES, Dec. 7, 2007, at A6.

<sup>33</sup> *Id.* ("China reported about 4,700 miners were killed in accidents" in 2006).

<sup>34</sup> Ruffenach, *supra* note 5, at 30-31. See generally, Tim Wright, *The Political Economy of Coal Mine Disasters in China: "Your Rice Bowl or Your Life,"* 179 CHINA Q. 629 (2004); see also Ben Blanchard, *Poverty Pushes Chinese into Risky Mining Jobs*, INTERNATIONAL HERALD TRIBUNE, Sept. 12, 2008, available at <http://www.ihf.com/articles/2008/09/11/business/mine.php>.

<sup>35</sup> See generally MILTON FRIEDMAN, *FREE TO CHOOSE: A PERSONAL STATEMENT* (1990).

<sup>36</sup> See, e.g., Robin Acton, *Ex-miner Recalls Sago: "It was a Hellhole,"* PITTSBURGH TRIBUNE REV., Jan 6, 2006, available at [http://www.pittsburghlive.com/x/pittsburghtrib/s\\_410907.html](http://www.pittsburghlive.com/x/pittsburghtrib/s_410907.html) ("Even if it's cold, damp and dangerous, it's good money in your pocket and food on your table. And that's important to men who didn't make it to college but have families to feed and bills to pay").

<sup>37</sup> For example, the International Coal Group has identified "any negative perceptions about our safety record affecting our ability to attract skilled labor" as business risk following the Sago mine accident. INT'L COAL GROUP, *BUILDING A STRONG FUTURE: 2007 ANNUAL REPORT* 37 (2007), available at <http://www.intlcoal.com/pages/investors/ICO2007AR.pdf>.

<sup>38</sup> See generally W. KIP VISCUSI, *RISK BY CHOICE: REGULATING HEALTH AND SAFETY IN THE WORKPLACE* (1983); see also PRICE V. FISHBACK, *SOFT COAL, HARD CHOICES* 79-98 (1992). But see Hal Sider, *Safety and Productivity in Underground Coal Mining*, 65 REV. OF ECON. & STAT.

The risk premiums paid to miners are in addition to workers' compensation premiums paid by mine operators. In most states, a coal mine operator with a high accident rate pays more in workers' compensation premiums.<sup>39</sup> Thus, workers' compensation premiums create another quasi-market incentive to maintain a safe mine.<sup>40</sup>

There are significant costs associated with mining accidents.<sup>41</sup> The Mine Safety and Health Administration (MSHA) has a tool on its web site that estimates the direct costs associated with mining accidents.<sup>42</sup> The costs are substantial: non-reportable accidents cost about \$7,000; disabling injuries cost about \$28,000; and fatal injuries cost almost \$1 million.<sup>43</sup> MSHA's calculator also shows that a mine operator with \$4 billion in sales and a 10% profit margin would need to produce another \$9.1 million in additional product to pay for the costs of one fatality.<sup>44</sup> To avoid these costs, an operator has substantial incentives to maintain a safe mine.

The marketplace for mine safety is complex and not limited to the exchanges between miners and mine operators and workers' compensation funds. Exchanges between mine operators and their shareholders, their insurers and their vendors, and service providers also impact the safety of the mine. For example, fire, explosion, inundation, and roof failure hazards that endanger miners also have the potential to destroy equipment, infrastructure and even reserves. Shareholders demand that mine operators take safety measures that will protect their invested capital and provide a reasonable return on investment. Insurance companies, which play a role in protecting invested capital, demand that mine

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225, 225, 231 (1983) (suggesting, but not concluding, that at union coal mining operations where wages are not determined competitively, a mine operator's wage costs might be insensitive to risk).

<sup>39</sup> West Virginia's workers' compensation program is only partially based on the injury experience of the operator. See W. VA. CODE § 23-2-4(A)(d)(2) (2008). ("The rule shall require the establishment of a program under which the commissioner may grant discounts on premium rates for employers who meet either of the following requirements: (A) Have not incurred a compensable injury for one year or more and who maintain an employee safety committee or similar organization and make periodic safety inspections of the workplace.").

<sup>40</sup> See generally Michael J. Moore and W. Kip Viscusi, *Promoting Safety Through Workers' Compensation: The Efficacy and Net Wage Costs of Injury Insurance*, 20 RAND JOURNAL OF ECON. 499 (1989); see also PRICE V. FISHBACK & SHAWN E. KANTOR, A PRELUDE TO THE WELFARE STATE 77-83 (2000).

<sup>41</sup> For example, the International Coal Group took a \$13 million charge in 2006 "relating to the Sago mine accident, including reserves established for claims and other future costs and \$4.7 million of carrying costs related to the mining operation prior to resuming operations at the end of the first quarter." INT'L COAL GROUP, MINING OPPORTUNITIES: 2006 ANNUAL REPORT 87 (2006), available at <http://www.intlcoal.com/pages/investors/ICO2006AR.pdf>.

<sup>42</sup> MINE SAFETY AND HEALTH ADMIN., COSTS OF ACCIDENTS, available at <http://www.msha.gov/s%26hinfo/costgenerator/costgenerator.htm>.

<sup>43</sup> *Id.*

<sup>44</sup> *Id.*

operators take safety measures to minimize the potential for a loss.<sup>45</sup> The bottom line is that the safety of a mine is impacted by a large number of complex exchanges.<sup>46</sup>

#### IV. GOVERNMENT AND INFORMATION

Prior to 1969 and the enactment of the Coal Act, the governmental solution to the “problem” of coal mine safety was a market-friendly one. The federal government did not focus on punishing coal operators for violations of regulations but instead focused its attention on creating safety information and providing it to the market participants.

The primary mission of the Bureau of Mines, which was established within the Department of the Interior in 1910, was to develop and provide information to miners and mine operators regarding coal mine safety.<sup>47</sup> Although the Bureau of Mines did obtain authority to order the closure of mines in 1952 for the violation of safety regulations, the Bureau never had authority to issue civil or criminal penalties for first instance violations. In this important respect, the Bureau of Mines was not a law enforcement agency as MSHA is today.

The federal government’s information approach complemented the market.<sup>48</sup> Information helps market participants make better exchanges. Miners have to understand risks in order to demand appropriate risk premiums. Information also helps mine operators make sound investments in safety. For example, the possibility of lightning igniting methane underground was not a widely known or understood risk prior to the Sago mine disaster.<sup>49</sup> The essence of safety is the recognition and avoidance of hazards, neither of which can happen without information.

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<sup>45</sup> For example, in its 2007 annual report, the International Coal Group has identified “any increased premiums for insurance and any claims that may be asserted against us that are not covered, in whole or in part, by our insurance policies” as presenting a risk to its business arising from the Sago mine accident. INT’L COAL GROUP, BUILDING A STRONG FUTURE, *supra* note 37, at 37.

<sup>46</sup> There has not been a great deal of study of the market for mine safety to measure incentives and premiums. The principles discussed in the article are predictions based on observations made by researchers in other industries.

<sup>47</sup> See Mark Aldrich, *Preventing “The Needless Peril of the Coal Mine”*: *The Bureau of Mines and the Campaign Against Mine Explosions, 1910-1940*, 36 TECH. & CULTURE 483, 491-95 (1995); RESEARCH COUNCIL, COMM. ON UNDERGROUND COAL MINE SAFETY & COMMITTEE ON ENGINEERING AND RESEARCH SYSTEMS, TOWARD SAFER UNDERGROUND MINES 53 (1982). See generally FISHBACK & KANTOR, *supra* note 40, at 113.

<sup>48</sup> See FISHBACK & KANTOR, *supra* note 40, at 113 (2000); Aldrich, *supra* note 47, at 501.

<sup>49</sup> See MINE SAFETY AND HEALTH ADMIN., U.S. DEP’T OF LABOR, INTERNAL REVIEW OF MSHA’S ACTIONS AT THE SAGO MINE WOLF RUN MINING COMPANY SAGO, UPSHUR COUNTY, WEST VIRGINIA 1, 2 (2007), available at <http://www.msha.gov/Readroom/FOIA/2007InternalReviews/Sago%20Internal%20Review%20Report.pdf> [hereinafter INTERNAL REVIEW].

One notable example of the government's early success with information was the Bureau's information campaign to convince mine operators to use rock dust to minimize explosions in underground coal mines. The rock dust prevents the coal dust from becoming an explosion hazard by diluting and covering the coal dust.<sup>50</sup> Mine insurers recognized the value of the information created by the Bureau's rock dust research and offered mine operators a reduced premium for applying rock dust.<sup>51</sup> As a result, mine operators began using rock dust, even though there was no legal mandate to do so.

## V. PERCEPTION AND REALITY

The market-based approach to mine safety, with the federal government playing an information-provider role, led to safer mines. For example, almost immediately after the Bureau provided the rock dusting information to the marketplace, the frequency and severity of coal mine explosions declined. Overall, fewer miners were being killed each year.<sup>52</sup> In terms of fatalities per million tons of coal mined, mine safety was improving at a rapid pace.<sup>53</sup> In 1910, about 29 miners were killed for every 5 million tons of coal produced, whereas by 1969, about 2 miners were killed for every 5 million tons of coal produced.<sup>54</sup>

Although coal mines were steadily getting safer, the Farmington mine disaster in 1968 triggered federal scrutiny of the safety of the nation's coal mines. Like the Sago mine disaster, the Farmington mine disaster, in which seventy-eight miners died, played out on television sets across America.<sup>55</sup> Congress believed that the market for mine safety had failed and needed to be fixed.<sup>56</sup>

Despite the Farmington disaster, there was scant evidence in 1969 that the free market was not properly conveying information about society's growing aversion to mining and other risks, which was associated with the rising standard of living in the United States. It is true that there was a history of mine disasters leading up to 1969. However, up until Farmington, the severity and

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<sup>50</sup> See 30 C.F.R. § 75.2 (2008) (defining rock dust).

<sup>51</sup> See G.B. Butterfield, *Employers Now Given Insurance Credit for Rock Dusting to Prevent Coal Mine Explosions*, 14 AM. LAB. LEGIS. REV. 276, 277 (1924).

<sup>52</sup> See CENTERS FOR DISEASE CONTROL, NUMBER OF FATALITIES AND FATALITY RATES (FIVE-YEAR AGGREGATES) IN THE MINING INDUSTRY BY COMMODITY, 1911-2005, available at [http://cdc.gov/niosh/mining/statistics/pdfs/f\\_hist\\_2.pdf](http://cdc.gov/niosh/mining/statistics/pdfs/f_hist_2.pdf).

<sup>53</sup> See Ruffennach, *supra* note 5, at 16, fig. 6.

<sup>54</sup> *Id.* at 7 (author's calculation 1910:2821/416,166,000 & 1969:203/570,670,000 (fractions reduced by a factor of 100 and rounded)).

<sup>55</sup> Chris Stirewalt, *Loss of Life Leads to Change*, CHARLESTON DAILY MAIL, Feb. 9, 1999, at 1A.

<sup>56</sup> 30 U.S.C. § 801(c) (2006) (" . . . to provide more effective means and measures for improving the working conditions and practices in the Nation's coal . . . mines.").

frequency of those disasters was declining.<sup>57</sup> Again, overall coal mining fatalities were declining at a rapid pace.

The only indication that safety was not improving was the rate of fatalities per 100,000 coal miners, which had not substantially declined in the two decades before 1969.<sup>58</sup> However, the fatalities per 100,000 coal miners rate was not a reliable indicator of the progress in coal mine safety because it did not take into account changes in coal production.<sup>59</sup> In the decades preceding 1969, the mechanization of mining enabled each miner to mine coal at a faster pace.<sup>60</sup> The increased amount and pace of mining exposed a decreasing number of miners to more hazards.<sup>61</sup> Thus, the rate of fatalities per 100,000 miners did not improve, even though there were substantially fewer fatalities overall and fewer fatalities per ton of coal mined.<sup>62</sup>

## VI. PREFERENCES AND PAY

Despite the lack of credible evidence that mines were not getting safer, Congress perceived the mining industry as being “inexcusably wasteful of our most precious asset – the human being.”<sup>63</sup> In essence, Congress did not believe that the nation’s miners were receiving adequate compensating premiums for the risks that they were facing in the mines. Put another way, Congress did not trust the miners of West Virginia and other coal states to make free choices that were in their own best self-interest.<sup>64</sup>

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<sup>57</sup> See Centers for Disease Control, *Coal Mining Disasters (Incidents with Five or More Fatalities)*, available at <http://cdc.gov/niosh/mining/statistics/discoal.htm>.

<sup>58</sup> The former Department of the Interior Secretary Walter J. Hickel testified that “there has been no improvement in the overall fatality rate since 1947.” H.R. REP. NO. 91-563, at 2506 (1969). See NAT’L INST. FOR OCCUPATIONAL SAFETY AND HEALTH, CENTERS FOR DISEASE CONTROL, NUMBER OF FATALITIES & FATALITY RATES IN THE MINING INDUSTRY BY COMMODITY, 1931-2005, available at [http://www.cdc.gov/niosh/mining/statistics/pdfs/f\\_hist\\_1.pdf](http://www.cdc.gov/niosh/mining/statistics/pdfs/f_hist_1.pdf).

<sup>59</sup> See JOHN BRAITHWAITE, TO PUNISH OR PERSUADE: ENFORCEMENT OF COAL MINE SAFETY 176-77 (1985).

<sup>60</sup> “As an old American folk song notes, an underground coal miner once shoveled ‘sixteen tons’ a day. In 1993, underground ‘longwall’ coal miners in the Western United States produced an average of 5.7 tons of coal per worker-hour.” J. David McAteer, *Don’t Undermine Mine Safety*, 16 MULTINATIONAL MONITOR ¶ 3 (1995), available at [http://www.multinationalmonitor.org/hyper/issues/1995/10/mm1095\\_05.html](http://www.multinationalmonitor.org/hyper/issues/1995/10/mm1095_05.html).

<sup>61</sup> H.R. REP. NO. 95-312, reprint (1977), available at <http://www.msha.gov/SOLICITOR/COALACT/leghist1.htm> (“Studies have shown that accelerated emphasis on production tends to push up both fatality and injury rates among the miners.”).

<sup>62</sup> See generally Maury Gittleman & Brooks Pierce, *A Different Approach to Measuring Workplace Safety: Injuries and Fatalities Relative to Output*, BUREAU OF LABOR STATISTICS ¶ 4 (July 26, 2006), <http://www.bls.gov/opub/cwc/sh20060724ar01p1.htm>.

<sup>63</sup> Walter J. Hickel, Department of the Interior Secretary, quoted in H.R. REP. NO. 91-563, at 2507 (1969).

<sup>64</sup> The Congress apparently bought into an old aphorism often attributed to Mark Twain: “Mine: a hole in the ground with a fool at the bottom and a liar at the top.”

The problem with second-guessing the risk premiums that are demanded by workers is that neither Congress nor regulators do a very good job of balancing risk and pay on behalf of others. Lawyers, professors, and government officials are not in the best position to make these very personal choices.<sup>65</sup> For example, an individual that invests the risk premium that he earns by working in a mine on regular health care, new tires on his car, and safe housing might have less overall mortality risk than the individual who opted out of the mines and took a statistically safer, but lesser paying job at Wal-Mart.<sup>66</sup> These choices need to be made by individuals that wear the boots, not the individuals that wear the suits.<sup>67</sup>

## VII. COMMAND AND CONTROL

Although Congress essentially perceived the risk for pay balance as being askew, Congress was only in a position to alter one side of the equation. Obviously, federal legislation to increase the hazard pay for one group of workers would not bode well with other workers. Therefore, Congress sought to alter the safety side of the equation.<sup>68</sup> And the Nixon Administration, which had no faith in free markets,<sup>69</sup> endorsed Congress's plans to supplant the market for coal mine safety with federal command and control style regulation.

Even though the problem identified by Congress was an economic one of perceived asset misallocation, Congress came up with a legal solution to alter

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<sup>65</sup> See VISCUSI, *supra* note 38, at 80 ("Since risky jobs become unattractive the higher one's income class, we should expect that many of those who are most outspoken on policy issues will consider the jobs of workers in hazardous industries abhorrent."); JOHN MENDELOFF, *REGULATING SAFETY: AN ECONOMIC AND POLITICAL ANALYSIS OF OCCUPATIONAL SAFETY AND HEALTH POLICY* 160 (1979) ("Without being easily able to rely on their own personal appraisal of the risk, they are placed in a more paternalistic position.").

<sup>66</sup> MENDELOFF, *supra* note 65, at 32-33 ("Other losers are workers who prefer facing job hazards . . . [and] [w]orkers who have to surrender risk premiums . . .").

<sup>67</sup> Newsome, *supra* note 18, at A1 ("We work at this mine because we choose to, not because we have to. We are proud of our mine and the miners we work with here. These men are well trained and operate million dollar pieces of equipment with in the confines of the coal mine as easily as you do your riding mower on your lawn. We are intelligent, skilled and are aware of our surroundings. None of us would ever allow any condition to exist that would injure one of our fellow workers on purpose. Every time that any of us have become aware of any hazard and reported it to any member of the company they have corrected it almost immediately. We feel that we have a safe mine or we would not work here.").

<sup>68</sup> S.R. REP. NO. 95-181, at 3408 (1977) ("The Committee believes that there is great need to encourage young people to go into the occupation of mining as the need of our nation for the minerals and energy sources extracted from the earth continues to increase. It is the Committee's feeling that the duty of the Congress, if it is to encourage such employment, is to make that employment as safe as possible.").

<sup>69</sup> Although the Nixon Administration was considered to be philosophically conservative, its actions demonstrated a distrust in the power of markets and in the freedom of individuals. The Nixon Administration went so far as to impose wage and price controls in 1971. See generally DANIEL YERGIN & JOSEPH STANISLAW, *THE COMMANDING HEIGHTS* 60-64 (1998).

the risk-pay equation.<sup>70</sup> The legal solution was the 1969 Coal Act. While it is ironic that Congress implemented a legalistic approach to the perceived economic problem, it is not surprising given the prevalence of lawyers in Congress.<sup>71</sup>

Thus, instead of imposing an injury tax on the mining industry or creating other incentives for investment in safety, Congress contrived a quasi-contractual system that allocated rights and duties within the mining industry.<sup>72</sup> Essentially, the Coal Act gave miners the right to a safe workplace and imposed on mine operators the duty of providing a safe workplace. The federal government took on the thankless role of enforcing those rights and duties.<sup>73</sup>

In its deliberate attempt to supplant the market, it is important to note that Congress also inadvertently relegated the states as minor players in coal mine safety.<sup>74</sup> The states have authority under their criminal codes to punish workplace conduct that is outside the range of societal norms.<sup>75</sup> Typically, such law enforcement focuses on bad actors that cause actual harm to others.<sup>76</sup> However, the extensive federal presence in the nation's mines marginalized the role of state law enforcement in removing bad actors from mining.<sup>77</sup>

### VIII. SAFETY AND COMPLIANCE

To a large extent, the legalistic approach also shifted society's focus from safety to compliance. For example, following the Sago mine disaster, the media flocked to MSHA's web site to examine the compliance record of the

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<sup>70</sup> H.R. REP. NO. 91-563 (10969), *reprinted in* 1969 U.S.C.C.A.N. 2503, 2507 ("A strong law is necessary to protect the men who extract one of our Nation's most vital resources.").

<sup>71</sup> See MILDRED AMER, CRS REPORT FOR CONGRESS, MEMBERSHIP OF THE 109<sup>TH</sup> CONGRESS: A PROFILE 1, 3 n.6 (2006), *available at* <http://www.senate.gov/reference/resources/pdf/RS22007.pdf> ("In the overwhelming majority of previous Congresses, business has followed law as the dominant occupation of Members. In the 109th Congress, 218 Members (160 Representatives, 58 Senators) list their occupation as law . . . ."); see also MENDELOFF, *supra* note 65, at 26 ("[T]he legal background of most congressmen . . . inclines them to make the reallocation of legal rights and duties rather than economic incentives the tool for effecting changes in behavior.").

<sup>72</sup> Compare 30 U.S.C. § 801(a) ("the first priority and concern of all in the coal or other mining industry must be the health and safety of its most precious resource—the miner") and § 801(e) ("the operators of such mines . . . have the primary responsibility to prevent [accidents]"). See also 30 U.S.C. §§ 814(a), 821 (2008).

<sup>73</sup> See, e.g., 30 U.S.C. §§ 811 (regulation), 813 (inspection) and 814, 817 & 820 (sanctions) (2008).

<sup>74</sup> See 30 U.S.C. § 955 (no preemption of state regulation).

<sup>75</sup> See generally David Rosner, *When Does a Worker's Death Become Murder?*, 90 AM. J. PUB. HEALTH, 535, 535-36 (2000).

<sup>76</sup> See generally Jordan Barab, *Guilty! Successful Homicide Prosecution Against Company that Killed Two Workers in Arizona*, 16 NEW SOLUTIONS: A J. OF ENVTL. & OCCUPATIONAL POL'Y 17, 17 (2006).

<sup>77</sup> See Ruffennach, *supra* note 5, at 32-33.

Wolf Creek Mining Company.<sup>78</sup> Evidently, the assumption was that the operator's compliance history would provide clues about the cause of the accident. Many lay persons, and even some prominent politicians, fell into the trap of equating compliance with safety.<sup>79</sup>

The fallacy of this line of investigation is that an operator's violation history does not correlate with an operator's safety record.<sup>80</sup> The dichotomy between compliance and safety exists because compliance is only a measure of law enforcement activity at a mine. It does not measure safety at a mine, in terms of injuries or fatalities. Unlike fatalities and injuries, which are real, violations are just pieces of paper that contain subjective opinions about whether perceived conditions may or may not present a hazard.

Perhaps the best example of the subjectivity is 30 C.F.R. 75.400, which happens to be the most frequently cited underground coal standard, accounting for over 16% of all underground coal mine safety violations issued by MSHA.<sup>81</sup> The regulation simply and plainly prohibits the "accumulation of combustible materials" in underground coal mines.<sup>82</sup> The difficulty with the regulation is that the determinations as to whether there is an "accumulation" and whether the accumulation is "combustible" are highly subjective.

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<sup>78</sup> See Brian Bowling & C.M. Mortimer, *Safety Citations Up Eighty-Four Percent*, PITTSBURGH TRIBUNE-REV., Jan. 4, 2006, available at [http://www.pittsburghlive.com/x/pittsburghtrib/s\\_410135.html](http://www.pittsburghlive.com/x/pittsburghtrib/s_410135.html); Alan Levin, et al, *Mine Had Hundreds of Violations*, USA TODAY, Jan. 5, 2006, at A3; Joby Warrick, *Safety Violations Have Piled Up at Coal Mine*, WASHINGTON POST, Jan. 4, 2006, at A4.

<sup>79</sup> See Senator Robert C. Byrd, Address Before the Senate, Enough: No More Failures for Coal Miners (Jan. 25, 2006), [http://byrd.senate.gov/speeches/2006\\_january/mine\\_safety.html](http://byrd.senate.gov/speeches/2006_january/mine_safety.html) ("Let us begin with the coal company that operated the Sago Mine, which had been issued 276 safety and health violations in 2004 and 2005. Let me put that into perspective. Could any driver rack up 276 tickets for reckless driving and still keep a license? What if someone had 276 mistakes on a tax return? You can bet that taxpayer would be looking at serious penalties and possibly jail time in a federal prison. But here was a coal company with 276 federal mine safety violations still operating. While some of these were minor transgressions, too many of them were 'Significant and Substantial,' or, simply put, very serious, and, yet, business went on as usual.").

<sup>80</sup> ICF CONSULTING, MINE SAFETY AND HEALTH ADMIN., U.S. DEP'T OF LABOR, MINE SAFETY PROGRAM EVALUATION FINAL REPORT 3-8 (2003), available at <http://www.msha.gov/readroom/FOIA/SpecialReports/ICFInspectionReport/MSHAMineInspectionProgramEvaluationReport.pdf> ("At the district level we also found a similar pattern in the data—for the most part there is no clear relationship between the total number of fatalities and days lost injuries and the total number of citations and S&S citations issued during regular inspections. We were told that earlier MSHA studies had indicated similar results.").

<sup>81</sup> Mine Safety and Health Admin., *Most Frequently Cited Standards for 2007 – Underground – Coal* (2007), available at <http://www.msha.gov/stats/top20viols/top20viols.asp> [hereinafter *Most Frequently Cited Standards for 2007*].

<sup>82</sup> 30 C.F.R. § 75.400 (2008) ("Accumulation of combustible materials. Coal dust, including float coal dust deposited on rock-dusted surfaces, loose coal, and other combustible materials, shall be cleaned up and not be permitted to accumulate in active workings, or on diesel-powered and electric equipment therein.").

The question of “accumulations” is problematic because the line between spillage and accumulations is not a bright one. As coal is being mined and transported, it spills. The Federal Mine Safety and Health Review Commission has noted “spillage of combustible materials may be inevitable in mining operations.”<sup>83</sup> The point at which ordinary spillage becomes an “accumulation” is determined on a case by case basis. The Commission has taken the approach that spillage constitutes an “accumulation” if “the quantity of combustible materials is such that, in the judgment of the authorized representative of the Secretary, it likely could cause or propagate a fire or explosion if an ignition source were present.”<sup>84</sup> In other words, if the inspector cites the spillage, it is transformed into an “accumulation.” In a later case, the Commission backed off its earlier holding somewhat by substituting the judgment of a “reasonably prudent person” for the judgment of the inspector.<sup>85</sup> But the Commission has never identified the threshold “quantity” of spillage that constitutes an “accumulation.”

The Tenth Circuit Court of Appeals, which is the only federal court to address the question of “accumulations,” has taken a slightly different approach.<sup>86</sup> The court explained “while everyone knows that loose coal is generated by mining in a coal mine, the regulation plainly prohibits permitting it to accumulate; hence it must be cleaned up with reasonable promptness, with all convenient speed.”<sup>87</sup> Thus, instead of focusing on the quantity of the spillage like the Commission, the Tenth Circuit would focus on the duration that the spillage has existed.<sup>88</sup> However, beyond the generic guidelines of “reasonableness promptness” and “convenient speed,” which are terms not used in the regulation, the court did not specify a threshold time in which spillage transforms into “accumulation.”

The “combustibility” question is even more subjective than the “accumulation” question. Coal dust and float coal dust is perpetually generated by active mining operations. Because the dust cannot be vacuumed off the mine roof and walls, it is largely controlled by covering it with rock dust, which, as indicated above, is an incombustible material.<sup>89</sup> Thus, whether or not an opera-

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<sup>83</sup> Old Ben Coal Co., 2 F.M.S.H.R.C. 2806, 2808 (1980).

<sup>84</sup> *Id.*

<sup>85</sup> See Utah Power & Light Co., Mining Division, 12 F.M.S.H.R.C. 965, 969 (1990), *aff'd* Utah Power & Light Co., Min. Div. v. Sec’y of Labor, 951 F.2d 292 (10th Cir. 1991).

<sup>86</sup> Utah Power & Light Co., 951 F.2d at 295 n.11.

<sup>87</sup> *Id.*

<sup>88</sup> *Id.* at 296.

<sup>89</sup> See 30 C.F.R. 75.402 (2008); see also Nat’l Inst. for Occupational Safety and Health, Centers for Disease Control and Prevention, *Float Coal Dust Explosion Hazards*, 515 TECH. NEWS 1, 1-2, available at <http://www.msha.gov/s&hinfo/rockdusting/nioshfloatcoal.pdf> (“Generalized rock dusting is currently the primary means of defense against coal dust explosions in U.S. mines.”); but see Mullins & Sons Coal Co., 16 F.M.S.H.R.C. 192, 197 (1994) (rockdusting is not a substitute for cleaning other accumulations of coal).

tor is in violation of 30 C.F.R. 75.400 depends in large part on the ratio of combustible to incombustible materials in the dust.<sup>90</sup> Because sampling and testing of incombustible content is not required,<sup>91</sup> the combustibility determination is based largely on the color of the area. Pure white areas, which suggest high incombustible rock dust content, are not in violation; but pure black areas, which suggest high amounts of combustible coal, are in violation. The problem is that most areas in a coal mine are various shades of gray. Thus, in many cases, whether or not there is a “violation” of 30 C.F.R. 75.400 depends, quite literally, on which “shade of gray” is observed by the inspector.<sup>92</sup> The subjectivity involved in differentiating “shades of gray” in a dark coal mine is obvious.<sup>93</sup>

### IX. FORCED-COMPLIANCE AND FREE MARKETS

Even though there is a questionable relationship between safety and compliance, government regulation of workplace safety is taken for granted nowadays. When a mine disaster like Sago occurs, society’s immediate reaction is that the mining industry requires more regulation and tougher enforcement.<sup>94</sup> In this respect, it is not surprising that shortly after the Sago mine disaster, Congress hastily enacted the MINER Act to require new regulations and to strengthen the existing enforcement provisions of the Mine Act. The Sago mine disaster also motivated MSHA to increase civil penalties across all mining industries, even though the agency was not mandated to do so by Congress.<sup>95</sup> The irony of the public, Congressional, and agency reaction to the Sago mine disaster is that, in many respects, the Sago mine disaster highlights the fundamental flaws in the forced-compliance approach. Despite its mainstream acceptance

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<sup>90</sup> There are specific ratios of incombustible content that must be met. 30 C.F.R. 75.403 (2008).

<sup>91</sup> See MINE SAFETY AND HEALTH ADMIN., MSHA HANDBOOK SERIES: GENERAL COAL MINE INSPECTION PROCEDURES AND INSPECTION TRACKING SYSTEM 1, 64 (2008) (“Visual determinations are normally sufficient to determine non-compliance with 75.400.”).

<sup>92</sup> Compare Consolidation Coal Co., 16 F.M.S.H.R.C. 1286, 1299-1301 (1994) (A.L.J.) (gray color not indicative of violation), and Consolidation Coal Co., 3 F.M.S.H.R.C. 487, 493-495 (1981) (A.L.J.) (gray color not indicative of violation), with Consolidation Coal Co., 15 F.M.S.H.R.C. 2255, 2259-2266 (1993) (A.L.J.) (gray color indicative of violation), and Consolidation Coal Co., WEVA 88-139 1 (1988) (gray color indicative of violation), and C.C.C.-Pompey Coal Co., 2 F.M.S.H.R.C. 163, 169 (1980) (A.L.J.) (gray color indicative of violation).

<sup>93</sup> See 5 MSHA PROGRAM POLICY MANUAL, *supra* note 89, at 49 (“There may be times when the inspector’s interpretation of what is an accumulation of float coal dust, loose coal and coal dust and/or other combustible materials will differ with the opinion of others.”).

<sup>94</sup> Scott Lilly, *MSHA and the Sago Mine Disaster* (Jan. 6, 2006), <http://www.americanprogress.org/issues/2006/01/b1333967.html>; Ian Urbina & Andrew W. Lehren, *U.S. Is Reducing Safety Penalties for Mine Flaws*, N.Y. TIMES, Mar. 2, 2006, at A1.

<sup>95</sup> See Mine Improvement and New Emergency Response Act of 2006, Pub. L. No. 109-236, 120 Stat. 493 (codified as amended in scattered sections of 30 U.S.C.).

and popular appeal, more than anything else, the forced-compliance approach to mine safety interferes with the market approach to mine safety by substituting rules for results, by substituting federal inspections for private audits and by substituting sanctions for cooperation.

A. *Rules Versus Results*

Following the Sago mine disaster, MSHA undertook an extensive investigation of the accident.<sup>96</sup> The primary focus of the investigation was to determine whether violations of federal regulations caused or contributed to the accident.<sup>97</sup> The conclusion was that the accident did not result from non-compliance with federal regulations.<sup>98</sup> The conclusion is not surprising.<sup>99</sup> Mining is a dynamic endeavor that is not easily reduced to a rulebook. Regardless of MSHA's valiant attempts to regulate every aspect of mining, there will always be countless decisions affecting safety that will always remain unregulated.

A separate investigation, which internally investigated MSHA's role in the accident, concluded that MSHA's regulations did contribute to the accident.<sup>100</sup> MSHA's regulation regarding mine seals, which protect active mining areas from abandoned mining areas, required the seals to be constructed to a 20 pounds per square inch ("psi") standard.<sup>101</sup> The forces generated by the Sago mine explosion, which was ignited by the lightning, exceeded 90 psi.<sup>102</sup> Thus, MSHA's standard misjudged the danger to miners by more than a factor of four. MSHA's misjudgment is not surprising.<sup>103</sup> Regulators are prone to the same errors in judgment as mine operators when decisions are based on imperfect information. Because regulators are removed from the mine, they have an even greater propensity than mine operators to under or over estimate hazards.

In light of these inherent deficiencies with regulations that were exemplified by the Sago mine disaster, a fair question to ask is whether regulations are better than the market alternative. In the market-based approach to mine

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<sup>96</sup> See ROBERT A. GATES, ET AL., MINE SAFETY AND HEALTH ADMIN., REPORT OF INVESTIGATION, FATAL UNDERGROUND COAL MINE EXPLOSION, JANUARY 2, 2006, SAGO MINE 1 (2007), available at <http://www.msha.gov/fatals/2006/Sago/ftl06C1-12wa.pdf>.

<sup>97</sup> *Id.*

<sup>98</sup> *Id.* at 187.

<sup>99</sup> Other recent mine disasters have not resulted from violations of regulations. See, e.g., Jim Walter Res., Inc., 27 F.M.S.H.R.C. 757 (2005) (A.L.J.), *aff'd in part*, Jim Walter Res., Inc., 28 F.M.S.H.R.C. 582 (2006) (vacating contributory violations associated with 2001 disaster that killed 13 miners); Plateau Mining Corp., 28 F.M.S.H.R.C. 501 (2006) (Commission divided on whether Willow Creek explosion resulted from violation).

<sup>100</sup> See INTERNAL REVIEW, *supra* note 49, at 64.

<sup>101</sup> *Id.* at 61.

<sup>102</sup> *Id.* at 63.

<sup>103</sup> MSHA also underestimated the risks presented by lightning as a potential ignition source. See INTERNAL REVIEW, *supra* note 49, at 2.

safety, there are no restrictions on the means by which mine operators achieve reductions in injuries. The approach to accident reduction depends upon market forces. The choice between behavior modifications, engineering controls, production changes or other means to improve safety is made based on the costs, benefits, and risks of the various approaches. In making decisions on how to proceed, the mine operator, guided by its self-interest, will draw on the experience of its miners, its managers, and the industry in order to tailor a solution that is appropriate to its operation.

Information about industry-wide experience is typically conveyed through standards. There is nothing inherently wrong with coal mine safety standards. Standards are a useful method of conveying information from generation to generation and from mine to mine. For example, after MSHA recently abdicated its authority to approve sanitary toilets for use in the nation's coal mines, the coal mining industry now refers to voluntary consensus standards developed by the American National Standards Institute ("ANSI") to guide it in toilet selection.<sup>104</sup>

Consensus standards differ from regulations in one important respect – they do not have the force and effect of law. When a standard is given the force and effect of law and becomes a regulation, it either loses its power to convey information or, alternatively, ends up stifling the innovation that is essential to improving safety. In this regard, regulations interfere with the market for mine safety.

#### 1. Generic Means Uninformative

Standards lose their ability to convey information when they are simplified into regulations that need to be administered and enforced. Many coal mine safety regulations are "simple and brief in order to be broadly adaptable to myriad circumstances."<sup>105</sup>

A good example, especially for persons who are not familiar with coal mining, is 30 C.F.R. 77.1607(c) (2008).<sup>106</sup> This is a surface coal mine safety standard related to speed limits for haulage equipment. It requires that vehicles used for haulage be operated at speeds that are "prudent and consistent with conditions of roadway, grades, clearance, visibility, traffic, and the type of equipment."<sup>107</sup> It does not even attempt to establish a speed limit in terms of

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<sup>104</sup> Up until 2003, mine operators could only install toilets that were approved by MSHA. *See* Standards for Sanitary Toilets in Coal Mines, 68 Fed. Reg. 19347, 19347-19350 (Apr. 21, 2003) (codified at 30 C.F.R. pts. 71.500, 1712-16 (2008)).

<sup>105</sup> *Kerr-McGee Corp.*, 3 F.M.S.H.R.C. 2496, 2497 (1981).

<sup>106</sup> *See* 30 C.F.R. § 77.1607(c) (2008) ("Equipment operating speeds shall be prudent and consistent with conditions of roadway, grades, clearance, visibility, traffic, and the type of equipment used.").

<sup>107</sup> *Id.*

miles per hour because there are so many variables. There is simply too much information to reduce it to a specific regulation.

The regulation completely fails as a standard because it provides no useful information. It does not help operators or miners make better decisions about appropriate speed limits under specific conditions. For example, it does not state that equipment in a certain weight class should not exceed a certain speed on a certain grade. It simply restates the obvious – use prudence while driving. The regulation only exists for the purpose of providing the government with a basis for meting out punishments.<sup>108</sup>

Even though broad regulations exist solely for punishment purposes, enforcement of broad and simple regulations is usually problematic.<sup>109</sup> If 30 C.F.R. § 77.1607(c) was the primary regulation with respect to traffic on public roadways, then the difficulties would be obvious to most persons. Police in one jurisdiction might have different perceptions of “prudent” than police in other jurisdictions. Enforcement would be inconsistent because the “prudent” speed for a Ferrari owner on a dry road with limited traffic would be different than the “prudent” speed for a Gremlin owner on wet road in heavy traffic. While reasonable persons can usually agree on the extreme examples, in the vast majority of circumstances, reasonable people can rightfully disagree as to the “prudent” speed. Drivers whose “prudence” was second-guessed by police would feel that they were being singled out and treated unfairly by the government.

The potential for subjective enforcement, as described above, is essentially the problem that has plagued the coal mining industry for almost 40 years. With respect to simple and broad standards, so-called “violations” are really nothing more than differences of opinion in many cases. It is not surprising, therefore, that many of the most frequently cited MSHA regulations are the ones that are “broad and simple.”<sup>110</sup>

The Review Commission has attempted to mitigate the obvious due process concerns arising from the enforcement of broad and simple standards. The Commission has held that an “alleged violative condition is appropriately measured against the standard of whether a reasonably prudent person familiar with the factual circumstances surrounding the allegedly hazardous condition, including any facts peculiar to the mining industry, would recognize a hazard warranting corrective action within the purview of the applicable regulation.”<sup>111</sup> The Commission has explained that the reasonably prudent person test is “an

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<sup>108</sup> See *Bluestone Coal Corp.*, 19 F.M.S.H.R.C. 1025, 1032 (1997) (“We also disagree with Bluestone’s argument that the standard applies only in instances where a driver demonstrates a lack of prudence in operating mobile equipment.”).

<sup>109</sup> See, e.g., *Arch of West Virginia*, 23 F.M.S.H.R.C. 447, 451 (2001) (A.L.J) (“The Secretary asserts that the slow speed of the fuel trucks impedes traffic, causes unsafe passing situations, limits the maneuverability of the trucks, compromises the safety of larger rock trucks and makes the drivers unable to control the fuel trucks on slippery roads.”).

<sup>110</sup> See *Most Frequently Cited Standards for 2007*, *supra* note 81.

<sup>111</sup> *Alabama By-Products Corp.*, 4 F.M.S.H.R.C. 2128, 2131(1982).

objective measure to determine if a condition is violative of a broadly worded standard.”<sup>112</sup>

While the Commission’s reasonable person approach may solve the due process problem, it has serious shortcomings. The reasonably prudent person test is not and can never be “objective” because, as set out above, safety is always subjective. To a large extent, the test merely substitutes the risk preferences of judges and regulators for the risk preferences of miners and mine operators.

More importantly, the reasonably prudent person test does not convert the regulation into a useful standard. It merely adds another layer of subjectivity in that the “prudent” operating speed is determined by a reasonably “prudent” person. In this respect, case by case adjudication provides very little, if any, future guidance to mine operators. A slightly different set of facts can easily lead to a completely different result.

In contrast, the market approach does not second-guess the judgment calls made by miners and mine operators. The market approach trusts the mine operator to apply enough rock dust to prevent an explosion that might destroy its mine and kill its workforce.<sup>113</sup> The market approach trusts the miner to operate the vehicle at a speed that is consistent with his self-interest of protecting himself and his co-workers from injury.<sup>114</sup> There is no disputing that some of those decisions will be wrong and result in persons getting hurt. The fallibility of the market approach is the only thing that it has in common with the forced-compliance approach.<sup>115</sup>

## 2. Specific Means Restrictive

Not all MSHA regulations are “simple and broad.” Some regulations are very specific. Specific standards do a good job of conveying information to

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<sup>112</sup> U.S. Steel Mining Co., L.L.C., 27 F.M.S.H.R.C. 435, 440 (2005) (“Under the approach used by the judge in attempting to apply the reasonably prudent person test, the judge essentially treated the MSHA expert as the reasonably prudent person, rather than viewing the facts from the perspective of an objective observer.”).

<sup>113</sup> Newsome, *supra* note 18, at A1 (“You see there was not one survivor of the explosion but seventeen (17). The “One Left” crew was in direct line of the explosion within 1,000 feet but none of them were seriously injured by the blast. Why????? Well, we will tell you why. It was because the area of the mine was so well rock dusted and maintained that the explosion did not propagate at all. When it ran out of methane it stopped. Our seventeen (17) miners know how close they came to death and thank God, MSHA and WVOMHST for their efforts. We also thank the company (ICG) for their corrective actions that stopped this explosion. Our miners exited the mine safely in the escape way, which had recently been cleaned, roof bolted and screened.”).

<sup>114</sup> See Ramar Coal Co., Inc., 14 F.M.S.H.R.C. 1146, 1152 (July 7, 1992) (A.L.J.) (“Truck driver Austin testified that he had the truck under control, and he denied that he was operating it in a “reckless manner” on the day in question . . .”).

<sup>115</sup> See, e.g., Dotson Trucking Co., Inc., 22 F.M.S.H.R.C. 441 (Mar. 30 2000) (A.L.J.) (existence of standard did not prevent accident resulting from excessive speed).

mine operators. However, specific standards present an entirely different set of problems.

One of the primary problems with specific standards is that they are often complicated. The standards, which are written by lawyers, have to be read by miners, sometimes while working underground. Some of the standards are so complicated that it is not clear what is required.<sup>116</sup> Even MSHA does not know what the standards mean.<sup>117</sup> To resolve the ambiguities in MSHA's specific regulations, the Commission relies on the deference doctrine developed by the federal courts.<sup>118</sup> Essentially, the deference doctrine provides that if an operator cannot understand the rule written by MSHA, then the rule means what MSHA says it means.<sup>119</sup>

While not all specific regulations promulgated by MSHA are difficult to understand, one thing that nearly all of them have in common is that they are wasteful. The waste results from a mine operator's inability to pursue different methods of achieving the safety purpose of the regulation.<sup>120</sup> The waste is not always obvious, but it does exist every time that a specific rule is promulgated. For example, MSHA requires a qualified person to make periodic methane tests at face areas from under permanent roof support, using extendable probes.<sup>121</sup> Such examinations are certainly a good practice. The problem posed by the rule was that in deep-cut mines, which used roof bolting machines that were equipped with automated temporary roof supports and methane monitors, taking a test from under permanent roof support unnecessarily slowed the mining process, exposed the miner to back injury associated with using extra long probes,

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<sup>116</sup> See, e.g., *Sec'y of Labor v. Spartan Mining Co.*, 415 F.3d 82, 83 (D.C. Cir 2005), *rev'g* *Cannelton Indus., Inc.*, 26 F.M.S.H.R.C. 146 (2004) (interpreting 30 C.F.R. § 75.360).

<sup>117</sup> See, e.g., *Akzo Nobel Salt, Inc. v. Fed. Mine Safety and Health Review Comm'n*, 212 F.3d 1301, 1302 (D.C. Cir. 2000) ("[L]itigation counsel's simultaneous advocacy of several different positions strongly suggests to us that the Secretary has in fact never grappled with and thus never exercised her judgment over the conundrum posed by the regulation's clear ambiguity.")

<sup>118</sup> See *Amax Coal Company*, 18 F.M.S.H.R.C. 1552 (1996) (citing *Chevron U.S.A., Inc. v. Natural Resources Def. Council*, 467 U.S. 837, 843-44 (1984)).

<sup>119</sup> See *Speed Mining, Inc.*, 28 F.M.S.H.R.C. 773, 782 (2006) (Chairman Duffy concurring and noting that under federal court precedent, "the Commission engage[s] in a kind of adjudicative bait-and-switch whereby mine operators are encouraged to appeal matters of law, policy or discretion even though the Commission is powerless to do anything but side with the Secretary.").

<sup>120</sup> There is a procedure by which a mine operator may obtain a variance from a MSHA regulation. See 30 C.F.R. § 44 (2008). However, the process, which can take years, is not well suited to a dynamic industry in which conditions change by the minute. See generally *Mettiki Coal*, 1999-MSA-6 (Apr. 7, 2000) (A.L.J.) (two years); *Freeman United Coal Mining Co.*, 1998-MSA-10 (A.L.J. Dec. 15, 1998) (more than a year); and *Consolidation Coal Co.*, 1993-MSA-4 (Apr. 22, 1994) (A.L.J.) (two years); see also *International Uranium Corp.*, 1999-MSA-0003, -0004, -0009 (Mar. 2, 2000) (A.L.J.) (appeals of petition denials by MSHA withdrawn due to mine closure); *LEECO, Inc.*, 1999-MSA-7 (Dec. 1, 1999) (A.L.J.) (appeal of petition denied by MSHA withdrawn); *Rochester and Pittsburgh Coal Co.*, 91-MSA-1 (Aug. 12, 1994) (A.L.J.) (appeal of petition denied by MSHA withdrawn due to mine ceasing production).

<sup>121</sup> 30 C.F.R. § 75.362 (pre-2003).

and potentially offered less reliable methane readings.<sup>122</sup> By MSHA's own conservative estimates, requiring mine operators to take the methane test from under permanent roof supports wasted about \$6.6 million dollars per year.<sup>123</sup> Even though the inefficiency was brought to MSHA's attention as early as 1998, MSHA did not amend the rule – to allow methane tests to be made by sweeping a probe in by the last roof support – until 2003.<sup>124</sup> In a market approach, where one-size-fits-all rules are not required, these inefficiencies do not exist. Operators have the freedom to tailor their practices to meet the safety concerns presented by the specific mine.

In addition to being wasteful, specific regulations discourage innovation. While specific regulations are intended to establish a minimum level of safety for mines, more often than not, regulations establish the maximum level of safety. The so-called rule-bound mentality exists because the prospect of future regulations discourages innovation. An early adopter or innovator runs the risk of having its investment in safety made obsolete by a regulation that specifically mandates a different approach. For example, personal emergency devices (“PEDs”), which, among other things, can be used to send one-way text messages to underground miners in the event of an emergency, have been commercially available since the early 1990s. A PED system, if it survived the explosion, might have been able to get a message to the Sago miners instructing them to evacuate the mine. MSHA does not require the use of PEDs.<sup>125</sup> As a result, only a handful of underground coal mines in the United States use the technology. One of the primary reasons for the low adoption rate in the United States is the fear that MSHA might ultimately mandate an alternative type of communication system. MSHA is currently evaluating several competing technologies, such as two-way texting.<sup>126</sup> If the agency ultimately decides to mandate a different technology, the early adopters will lose their investment in the PED systems that they have already installed.

While miner advocates have been critical of MSHA for the delay in adopting an emergency communication regulation,<sup>127</sup> the problem is not with MSHA but with regulation in general. One of the primary disadvantages of

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<sup>122</sup> Coal Mine Safety & Health, 67 Fed. Reg. 60611–16 (Sept. 26, 2002) (to be codified at 30 C.F.R. pt. 75) (2008).

<sup>123</sup> *Id.* at 60615.

<sup>124</sup> *Id.* at 60611.

<sup>125</sup> Coal Mine Safety & Health, 68 Fed. Reg. 53037, 53041 (Sept. 9, 2003) (to be codified at 30 C.F.R. pts. 48 & 75) (2008).

<sup>126</sup> U.S. Dep't of Labor, Mine Safety and Health Admin., *MSHA Aggressively Assessing, Testing Communication and Locating Devices for Underground Mines* 1 ¶ 3 (Feb. 3, 2006), <http://www.dol.gov/opa/media/press/msha/MSHA20060218.htm> (last visited Sept. 19, 2008) [hereinafter *MSHA Aggressively Assessing*].

<sup>127</sup> Ken Ward, Jr., *Bush, MSHA Cast Aside Text Devices: Technology might have saved W.Va. miners' lives*, CHARLESTON GAZETTE, Jan. 29, 2006, at 1, available at <http://www.saturdaygazette.com/news/the+sago+mine+disaster/200601290010>.

Soviet-style central planning is that MSHA has to adopt approaches that will work in all mines.<sup>128</sup> In contrast, the market approach is flexible and allows mine operators to adopt technologies that work best in their specific mines.

Moreover, the market approach offers the additional advantage of real world competition between technologies. In the market, exchanges between technology companies and mine operators would ultimately sort out which technology solution is best for each mine. This has definite advantages over industry-wide rules based on laboratory findings which, as Sago shows, can lead to disastrous results.<sup>129</sup>

### B. *Inspections Versus Audits*

In the year preceding the Sago mine disaster, MSHA inspected the Sago mine 154 out of 365 days.<sup>130</sup> In the quarter preceding the disaster, a federal inspector was at the Sago mine thirty-nine times.<sup>131</sup> A MSHA inspector was at the Sago mine on December 27, 2005, just six days prior to the explosion.<sup>132</sup> While a subsequent internal review of MSHA's inspection activity at the Sago mine revealed some minor deficiencies in the inspections performed by MSHA, in general, the Sago mine had been inspected as intended by the Mine Act.<sup>133</sup>

While the level of federal involvement at the Sago mine was ordinary by MSHA standards, it was extraordinary compared to any other industry. There is no other industry in the United States that can expect to see a federal inspector more than one out of every three days. Despite this fact, following the Sago mine disaster, many called for an even greater federal presence in the nation's mines.<sup>134</sup> Some forced-compliance advocates, particularly those who measure the success of a government program in terms of how much public resources it consumes, argued that more government spending is required on mine safety enforcement.<sup>135</sup>

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<sup>128</sup> NAT'L MINING ASSOC., TESTIMONY OF MICHAEL PEELISH, SENIOR V.P., SAFETY & HUM. RESOURCES FOUND. COAL CORP. ON BEHALF OF NAT'L MINING ASSOC.: HEARING BEFORE THE S. COMM. ON HEALTH, EDUC., LAB. AND PENSIONS, 109TH CONG. 3-5 (2006) [hereinafter TESTIMONY OF MICHAEL PEELISH], available at [http://help.senate.gov/Hearings/2006\\_03\\_02/Pellish.pdf](http://help.senate.gov/Hearings/2006_03_02/Pellish.pdf) ("My hope is that realistic expectations of what is technologically achievable drive whatever requirements become either law or "Best Practice" in the industry.").

<sup>129</sup> INTERNAL REVIEW, *supra* note 49, at 55-56 (MSHA 20 psi seal standard based on Bureau of Mines' laboratory tests).

<sup>130</sup> *Id.* at 11-13.

<sup>131</sup> *Id.* at 4.

<sup>132</sup> *Id.* at 140.

<sup>133</sup> *Id.*

<sup>134</sup> See Posting of Scott Shields, *How Bush Failed the Sago 13*, to <http://www.mydd.com/story/2006/1/3/94912/78006> (Jan. 3, 2006, 9:49:12 EST).

<sup>135</sup> See CHRISTOPHER W. SHAW, UNDERMINING SAFETY: A REPORT ON COAL MINE SAFETY, CENTER FOR STUDY OF RESPONSIVE LAW (2008), available at <http://www.cslr.org/reports/UnderminingSafety.pdf>; Daniel Goode, *Senators Say Mine Safety*

The call for a greater federal presence in the nation's mines is ironic. Greater federal presence could not have prevented the Sago mine disaster. Even though the MSHA inspectors had specifically examined the mine seals that failed at Sago, the seals complied with the 20 psi limit set out in MSHA's regulations.<sup>136</sup> Although MSHA inspectors have authority to close mines for non-violative imminently dangerous conditions,<sup>137</sup> neither the inspector that was at the mine on December 27, 2005, nor anyone else could have foreseen the circumstances that triggered the January 2, 2006 explosion. Prior to the Sago disaster, the information that might have prevented the accident did not exist.

The problem with federal inspections is not that there is not enough federal inspection activity at the nation's mines, but rather that there may be too much inspection activity. Admittedly, it is unorthodox to suggest that safety inspections may be detrimental. According to safety cliché, "another set of eyes" is always considered beneficial.

To understand the detriment of a substantial inspector presence at underground coal mines, it is important to understand how inspections would be performed in a free market. In a free market, miners and insurance companies have significant incentives to verify that a mine operator is operating a safe mine. An individual miner has a strong incentive to provide for his own safety and even the safety of his co-workers. The insurance company has a strong incentive to minimize losses at the mine. Typically, the miner focuses on hazards in his workplace, while the insurer focuses risks to the entire mine.

While neither miners nor insurance auditors are precluded from performing inspections under the Mine Act, the vigilance of insurers and miners is diminished by the extent of federal involvement.<sup>138</sup> The principle that reduces the vigilance is akin to what is commonly referred to as a moral hazard. A moral hazard exists when a party that perceives itself as insulated from risk behaves differently from the way it would behave if it perceived full exposure to the risk. While any type of audit has the potential to create a false sense of security and lull miners into complacency,<sup>139</sup> the lulling effect of inspections by

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*Agency Needs More Money*, CONG. DAILY, Jan. 23, 2006, <http://www.govexec.com/dailyfed/0106/012306cdpm1.htm> (last visited Sept. 18, 2008); see also OMB Watch, *Coal Mine Safety Shortchanged by Years of Budget Cuts*, Vol. 9, No. 4 OMB WATCH, Feb. 20, 2008, <http://www.ombwatch.org/article/articleview/4177/1/85/?TopicID=2> (last visited Sept. 18, 2008) ("A direct correlation between MSHA's budget and coal mine safety may not exist, but recent evidence indicates resource constraints are making it more difficult for MSHA to conduct oversight and enforcement activity and to write the rules that protect miners.").

<sup>136</sup> See INTERNAL REVIEW, *supra* note 49, at 57.

<sup>137</sup> 30 U.S.C. § 817(a) (2006).

<sup>138</sup> Ruffennach, *supra* note 6, at 27-29.

<sup>139</sup> JULIE BARR, LAURENTIAN UNIV., INCO LTD. (A), HEALTH AND SAFETY IN MINING 5 (2004), *available at* <http://www.safetymanagementeducation.com/en/data/files/download/Documents/inco%20levack%20part%20A.pdf> (critique of metal mine operator internal audit which "created a false sense of security, which was often accompanied by increased complacency.").

government can be expected to be greater since the government, unlike an insurer, is perceived as unbiased.

In the case of miners, they have every reason to believe that it is the federal government's job to insulate them from workplace risk. With the sole exception of carrying smoking materials into underground coal mines,<sup>140</sup> the Mine Act does not hold miners liable for safety violations, even deliberate ones.<sup>141</sup> The Mine Act states "the first priority and concern of all in the coal or other mining industry must be the health and safety of its most precious resource—the miner."<sup>142</sup> Because a miner might see a federal inspector one out of every three days, it is certainly reasonable for a miner to be lulled into a false sense of security.

Although whether or not MSHA's inspection activities have lessened the vigilance of miners has not been studied, there are anecdotal cases that illustrate the point. In *Olson v. United States*, for example, two metal miners who were permanently disabled by a roof fall at an underground metal mine sued MSHA for negligent inspection.<sup>143</sup> Prior to the accident, miners at the mine had called MSHA six times to report roof hazards.<sup>144</sup> MSHA did not investigate the complaints.<sup>145</sup> During MSHA's quarterly inspection, the barricaded areas, which had been highlighted in the complaints, were not inspected.<sup>146</sup> A roof fall subsequently occurred in an uninspected area, killing one miner and disabling the two miners who brought suit.<sup>147</sup> The case shows the extreme level to which miners depend on MSHA to protect their safety. Instead of taking matters into their own hands, the concerned miners opted to rely on MSHA to provide for their safety.

### C. *Punishment Versus Cooperation*

In the year preceding the Sago mine disaster, MSHA issued 208 citations to the mine operator.<sup>148</sup> Every citation had to be abated or fixed by the operator, even if the operator did not agree with the allegation of non-compliance.<sup>149</sup> MSHA also issued 16 closure orders at the Sago mine.<sup>150</sup> Every

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<sup>140</sup> 30 U.S.C. § 820(g) (2006).

<sup>141</sup> See *Fort Scott Fertilizer-Cullor, Inc.*, 17 F.M.S.H.R.C. 1112 (1995) (operator liable for employee misconduct).

<sup>142</sup> 30 U.S.C. § 802 (2006).

<sup>143</sup> 362 F.3d 1236, 1236 (9th Cir. 2004), *rev'd by* 546 U.S. 43 (2005).

<sup>144</sup> *Id.*

<sup>145</sup> *Id.*

<sup>146</sup> *Id.*

<sup>147</sup> *Id.*

<sup>148</sup> INTERNAL REVIEW, *supra* note 49, at 20.

<sup>149</sup> Operators that do not abate violations in the time specified by the MSHA inspector are subject to closure orders and \$6,500 per day penalties. See 30 U.S.C. §§ 814(b) & 820(b) (2006).

closure order imposed tangible costs on the operator in terms of lost production.<sup>151</sup> On top of this, MSHA assessed the operator over \$24,000 in fines.<sup>152</sup>

Immediately following the Sago disaster, advocates of the “safety through laws” paradigm immediately inferred that even greater enforcement must be required to prevent a reoccurrence of the accident.<sup>153</sup> Seizing on public sentiment, Congress hastily enacted the MINER Act, which strengthened MSHA enforcement authority, on June 15, 2006.<sup>154</sup> MSHA, on its own initiative, amended its civil penalty regulations to provide for significantly higher penalties per violation on March 22, 2007.<sup>155</sup> Both measures became law before MSHA even issued its Report of Investigation on May 9, 2007, which concluded that the Sago mine disaster was not the result of non-compliance with regulations.<sup>156</sup>

Now that dust has settled, it is fair to ask whether the knee-jerk reactions to the disaster are going to improve mine safety. The probable outcome is that the complicated system of punishment will make relations between MSHA and mine operators even more adversarial than they were in the past. The adversity will likely slow the flow of safety information from government to the market participants. The only certainty is that there will be plenty of work for lawyers.

#### 1. Unmeasured Means Ineffective

The recently implemented changes to the Mine Act penalty process are primarily monetary in nature. Congress raised the maximum civil penalty from \$60,000 to \$220,000 for a new class of violations known as “flagrant.”<sup>157</sup> None

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<sup>150</sup> INTERNAL REVIEW, *supra* note 49, at 20 & Appendix E.

<sup>151</sup> Thomas Frank, *Senators Urge Bigger Fines for Mines*, USA TODAY ¶ 5, Feb. 2, 2006, available at [http://www.usatoday.com/news/washington/2006-03-02-mine-investigation\\_x.htm](http://www.usatoday.com/news/washington/2006-03-02-mine-investigation_x.htm) (quoting MSHA Administrator David Dye saying “Closure orders are your biggest hammer . . . . Shutting down portions of a mine until it is deemed safe can cost up to \$150,000 in lost coal production.”)

<sup>152</sup> Mine Safety and Health Admin., Questions and Answers on the Sago Mine Accident (2007) <http://www.msha.gov/sagomine/sagoqa01182006.asp> (last visited Oct. 1, 2008).

<sup>153</sup> Editorial, *Coal is King, But Its Queen is Safety*, CHRISTIAN SCI. MONITOR, Jan. 5, 2006 (“Early reports on the causes for this week’s accident indicate a need for state and federal inspectors to be given greater enforcement tools when a company shows a pattern of neglect in not taking all necessary safety precautions.”); *see also supra* note 132.

<sup>154</sup> *See* Press Release, President Bush Signs S.2803, the Miner Act of 2006 (June 15, 2006), available at <http://www.whitehouse.gov/news/releases/2006/06/20060615-2.html>.

<sup>155</sup> *See* Press Release from the Mine Safety and Health Administration, U.S. Dep’t of Labor, U.S. Dep’t of Labor’s MSHA to Publish Final Rule on Civil Penalties (Mar. 21, 2007), available at <http://www.dol.gov/opa/media/press/msha/msha20070398.htm>.

<sup>156</sup> *See* GATES, *supra* note 96.

<sup>157</sup> Mine Improvement and New Emergency Response Act of 2006 (MINER Act), Pub. L. No. 109-236, § 8, 120 Stat. 493, 501 (2006) (“Violations under this section that are deemed to be flagrant may be assessed a civil penalty of not more than \$220,000. For purposes of the preceding

of the pre-disaster Sago mine violations would have been impacted by the new provision. The more significant changes to the punishment component were made by MSHA.<sup>158</sup> MSHA modified its penalty schedule to increase fines for all violations. These changes would have increased the pre-disaster penalties assessed at Sago from \$24,000 to about \$82,000.<sup>159</sup> Under the new penalty rule, MSHA assessed about \$75 million in calendar year 2007 across all mining industries, which is a substantial increase over the \$25 million collected in the year before the Sago disaster.<sup>160</sup>

MSHA predicted that the substantial increase in penalties would lead to greater compliance. In fact, MSHA went so far as to explain that “each 10% increase in penalty for a violation is associated with a 3% decrease in its probability of occurrence.”<sup>161</sup> However, it turns out that there was no science, or even an attempt at science, behind MSHA’s estimate. In the Preliminary Economic Regulatory Analysis for the proposed penalty change, MSHA conceded that the agency “performed no studies to estimate the size of this effect.”<sup>162</sup> In other words, the cause and effect relationship was assumed and the estimate was made-up.<sup>163</sup>

The complete lack of any science is one of the primary problems with the concept of using monetary penalties to motivate compliance activity. No one has ever calculated the market incentives to maintain a safe mine and com-

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sentence, the term ‘flagrant’ with respect to a violation means a reckless or repeated failure to make reasonable efforts to eliminate a known violation of a mandatory health or safety standard that substantially and proximately caused, or reasonably could have been expected to cause, death or serious bodily injury.”). MSHA subsequently raised the maximum penalty for non-flagrant violations from \$60,000 to \$70,000 based on a cost of living adjustment. 73 Fed. Reg. No. 26 (Feb. 7 2008).

<sup>158</sup> The agency also began using its pattern of violations authority which had lain dormant for many years prior to Sago. See Press Release, Mine Safety and Health Administration, U.S. Department of Labor, MSHA Puts 16 Mine Operators on Notice for Potential Pattern of Violations (June 17, 2008), available at <http://www.dol.gov/opa/media/press/msha/MSHA20080794.htm>.

<sup>159</sup> This is a rough estimate based on the 243% increase predicted by MSHA’s impact statement. See MINE SAFETY AND HEALTH ADMIN., U.S. DEP’T OF LABOR, PRELIMINARY REGULATORY ECONOMIC ANALYSIS FOR CRITERIA AND PROCEDURES FOR PROPOSED ASSESSMENT OF CIVIL PENALTIES (2006) 20 TABLE IV-8 [hereinafter PRELIMINARY REGULATORY ECONOMIC ANALYSIS], available at <http://www.msha.gov/REGS/REA/06-7512CivilPenalties.pdf>. The estimate underestimates the impact of the penalty increase.

<sup>160</sup> MINE SAFETY AND HEALTH ADMIN., U.S. DEP’T OF LABOR, NUMBER OF PENALTIES ASSESSED AND PERCENT CONTESTED: JANUARY 2005 – JUNE 2008 (2008), available at <http://www.msha.gov/STATS/ContestedCitations/Civil%20Penalties%20Assessed%20and%20Contested.pdf>.

<sup>161</sup> Criteria and Procedures for Proposed Assessment of Civil Penalties, 71 Fed. Reg. 174, 53065 (Sept. 8, 2006) (to be codified at 30 C.F.R. pt. 100).

<sup>162</sup> PRELIMINARY REGULATORY ECONOMIC ANALYSIS, *supra* note 159 at 15.

<sup>163</sup> In the preamble to the final civil penalty rule, MSHA essentially conceded that it had no evidence that raising penalties would increase compliance. See Criteria and Procedures for Proposed Assessment of Civil Penalties, 72 Fed. Reg. 55, 13593 (Mar. 22, 2007) (to be codified at 30 C.F.R. pt. 100).

pared the incentives to the penalties being assessed by MSHA. In all likelihood, the amount paid in risk premiums, workers' compensation premiums, insurance costs and other accident related costs dwarfs the \$75 million in penalties that MSHA assessed in calendar year 2007. For example, in 2006 the International Coal Group took a \$13 million charge, which was almost 50% of the total 2005 penalties assessed by MSHA, related to costs associated with the Sago accident.<sup>164</sup> In this perspective, it is doubtful that \$75 million spread across thousands of mining companies in multiple industries is going to result in safer mines.

## 2. Subjective Means Unpredictable

In addition to the proportion problem, the other problem with the Mine Act's penalty system, as currently and formerly implemented by MSHA, is its subjectivity. Under the Mine Act, penalties are based on six criteria: the history of previous violations, the size of the business, the operator's negligence, the ability to continue in business, the gravity of the violation, and the demonstrated good faith of the operator charged in achieving abatement.<sup>165</sup> The gravity and negligence criterion are highly subjective, even more so than the findings of violation that the inspector is required to make with respect to the broad and simple regulations.

There are four primary gravity findings that a MSHA inspector is required to make.<sup>166</sup> First, the inspector is required to forecast the likelihood of the violation resulting in an injury. The inspector can choose between no likelihood, unlikely, reasonably likely, highly likely, and occurred. Second, the inspector is required to predict the severity of the injury that might result from the violation by choosing between no lost work days, lost work days, permanently disabling, or fatal. Third, the inspector is required to estimate how many persons might be injured. Fourth, the inspector is required, based on the first two findings, to designate the violation as significant and substantial ("S&S") or not "S&S."<sup>167</sup>

Contrary to what might be the popular perception, science plays absolutely no role in any aspect of the gravity determination. The Commission has specifically rejected the notion that gravity determinations should be based on probabilities.<sup>168</sup> The Commission has not even provided a useful definition of

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<sup>164</sup> INT'L COAL GROUP, INC., BUILDING A STRONG FUTURE, ANNUAL REPORT 77, available at <http://www.intlcoal.com/pages/investors/ICO2007AR.pdf>.

<sup>165</sup> 30 U.S.C. § 815(b)(1)(B) (2006).

<sup>166</sup> 30 C.F.R. § 100.3(e) (2008).

<sup>167</sup> See *Mathies Coal Company*, 6 F.M.S.H.R.C. 1, 3-4 (1984); see also *Elk Run Coal Co., Inc.*, 28 F.M.S.H.R.C. 190 (2006).

<sup>168</sup> See *AMAX Coal Co.*, 19 F.M.S.H.R.C. 846, 849-51 (1997) (rejecting "more probable than not"); see also *United States Steel Mining Co., Inc.*, 18 F.M.S.H.R.C. 862, 864-7 (1996) (same);

the term “reasonably likely.”<sup>169</sup> So, except in the rare cases where an injury has already occurred at the time citation is issued, these gravity determinations are nothing more than the opinion of just one person as to whether or not a violation “could” lead to an injury.<sup>170</sup> Because very few MSHA inspectors are professional risk managers, most are not qualified to make such gravity determinations.<sup>171</sup> Thus, when persons talk about a “significant and substantial” violation, all they are really talking about is a check mark on a piece of paper.

The so-called “negligence” determination is equally problematic. The “negligence” criterion is actually an assignment of fault based on the behavior of the mine operator.<sup>172</sup> The Mine Act defines four types of violations that are characterized by the mine operator’s behavior: “negligent,”<sup>173</sup> “unwarrantable failure,”<sup>174</sup> “knowing,”<sup>175</sup> and “willful.”<sup>176</sup> As indicated above, the MINER Act added a new fifth category of “flagrant.” Over 96% of all violations issued by MSHA at underground coal mines fall in the “negligent” category,<sup>177</sup> which

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*see also* Energy West Mining Company, 15 F.M.S.H.R.C. 1836,1837-38 (1993) (rejecting “substantial possibility”).

<sup>169</sup> Sec’y of Labor v. United States Steel Mining Co., Inc., 18 F.M.S.H.R.C. 862, 868-69 (1996) (Marks, J., concurring) (“The parties’ conflict is understandable because the term ‘reasonable likelihood’ may convey different meanings. To U.S. Steel, the word ‘likelihood’ governs, and the term ‘reasonable likelihood’ means ‘more probable than not.’ To the Secretary, the word ‘reasonable’ modifies ‘likelihood’ to mean a *reasonable potential*, not ‘more probable than not.’”); *see also* the “significant and substantial” phrase in Sections 104(d) and (e) of the Federal Mine Safety and Health Act of 1977; Interpretive Bulletin, 63 Fed. Reg. 24, 6012 (Feb. 5, 1998) (withdrawn MSHA interpretive bulletin); *see also* Cement Div., National Gypsum Co., 3 F.M.S.H.R.C. 822 (1981) (Lawson, J., dissenting) (“To recast the statute in terms of the significance or substantiality of the hazard, and the predicted result thereof, is simply not in accord with either the English language or the language of the Act.”).

<sup>170</sup> *See, e.g.*, Twentymile Coal Co., 26 F.M.S.H.R.C. 666, 680 (2004); *see also* Zeigler Coal Co., 15 F.M.S.H.R.C. 949, 953-54 (1993) (reasoning that the judge’s several uses of the word “could” in his analysis are not sufficient grounds for reversing his S&S determination). *But see* Zeigler at 953-54 (“[S]tatements that such events could occur, standing alone, do not support a finding that there was a reasonable likelihood of an ignition.”).

<sup>171</sup> *See* 30 U.S.C. § 504 (2006). *But see* U.S. GOV’T ACCOUNTABILITY OFFICE, MSHA’S REVISED HIRING PROCESS HAS IMPROVED THE AGENCY’S RECRUITING EFFORTS, BUT ITS HUMAN CAPITAL STRATEGIC PLAN DOES NOT ADEQUATELY PROJECT OR ADDRESS ITS FUTURE WORKFORCE NEEDS, 2 (2007), available at <http://www.gao.gov/new.items/d07704r.pdf> (“5 years of practical experience is preferred, but not required”).

<sup>172</sup> Emery Mining Corp., 9 F.M.S.H.R.C. 1997, 2000 (1987) (“increasingly severe sanctions for increasingly serious . . . operator behavior” (quoting Cement Division, National Gypsum Co., 3 F.M.S.H.R.C. 822, 828 (1981))).

<sup>173</sup> 30 U.S.C. § 815(b)(1)(B) (2006).

<sup>174</sup> *Id.* § 814(d) (2006).

<sup>175</sup> *Id.* § 820(c) & (d) (2006).

<sup>176</sup> *Id.* § 820(d)

<sup>177</sup> INTERNAL REVIEW, *supra* note 49, at 24 (table).

connotes unintentional conduct.<sup>178</sup> This may come as shock to most forced-compliance advocates who often ascribe evil motives to mine operators. While penalties might be presumed to deter intentional conduct, it is questionable whether penalties can effectively deter the “ordinary negligence” that characterizes most MSHA violations.<sup>179</sup>

Evidently, MSHA was not satisfied with the four categories of behaviors established by the Mine Act. In promulgating its civil penalty regulations to implement the Mine Act, MSHA created five additional categories of punishable behavior. These categories include “no negligence,” “low negligence,” “moderate negligence,”<sup>180</sup> “high negligence,”<sup>181</sup> and “reckless disregard.”<sup>182</sup> Even though there are now nine total classifications of behavior, it does mean that the process of assigning fault is an easy one. Assigning blame, which entails making determinations about motives and justifications for behaviors, is highly subjective.<sup>183</sup>

The one category that deserves special mention is “no negligence.” The category of “no negligence,” which accounts for about 3% of underground coal mine violations, is reserved for no-fault violations.<sup>184</sup> The Mine Act has been interpreted as imposing liability without fault.<sup>185</sup> MSHA must cite and penalize an operator even if the operator could not prevent the violation.<sup>186</sup> It is not clear

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<sup>178</sup> *Emery Mining Corp.*, 9 F.M.S.H.R.C. 1997, 2001 (1987) (defining “negligence” as “the failure to use such care as a reasonably prudent and careful person would use and is characterized by ‘inadvertence,’ ‘thoughtlessness,’ and ‘inattention.’”).

<sup>179</sup> BRAITHWAITE, *supra* note 59, at 99. (“When there is a willingness to do the right thing, across-the-board punishment is simply not the best strategy for maximizing compliance . . . this is the very mistake that the U.S. Mine Safety and Health Act perpetuates.”). *See, e.g.*, *Westmoreland Coal Co.*, 7 F.M.S.H.R.C. 1338, 1344 (1985) (affirming violation despite “the repeated efforts to remove the formation and the consequent good faith belief on the part of all concerned that the formation posed no hazard”).

<sup>180</sup> 30 C.F.R. 100.3(d) (2008) (“mitigating circumstances” v. “considerable mitigating circumstances”).

<sup>181</sup> *Mettiki Coal Corp.*, 13 F.M.S.H.R.C. 760, 770 (1991) (“The Commission has not precisely defined what constitutes ordinary, high or gross negligence.”); *see also* *Eastern Associated Coal Corp.*, 13 F.M.S.H.R.C. 178, 187 (1991) (“high negligence” is “an aggravated lack of care that is more than ordinary negligence.”).

<sup>182</sup> 30 C.F.R. § 100.3(d) (2008).

<sup>183</sup> *See, e.g.*, *Lafarge Construction Materials and Theodore Dress*, 20 F.M.S.H.R.C. 1140 (1998) (majority stating that the operator “demonstrated a serious lack of reasonable care”) (dissent stating that the operator “had no reason to believe its procedures were inadequate”).

<sup>184</sup> INTERNAL REVIEW, *supra* note 49, at 24.

<sup>185</sup> *See Sewell Coal Co. v. Fed. Mine Safety & Health Review Comm’n*, 686 F.2d 1066 (4th Cir. 1982); *see also* *Allied Products Co. v. Fed. Mine Safety and Health Review Comm’n*, 666 F.2d 890 (5th Cir. 1982).

<sup>186</sup> *See, e.g.*, *Rushton Mining Co.*, 10 F.M.S.H.R.C. 249 (1988) (holding that the operator violated the Mine Act based on an undiscovered defect in wire rope); *see also* *Basin Resources Inc.*, 19 F.M.S.H.R.C. 1565 (1997) (A.L.J.) (holding that the operator violated the Mine Act by not providing additional ground support even though hazardous conditions had just occurred).

how no-fault liability can motivate compliance given that the “no negligence” finding implies that there was no ability to control the conditions in the first place.

The negligence and gravity designations made by the inspector on the citation equate to penalty points, which are used to calculate the fine for the violation.<sup>187</sup> However, because gravity, negligence and, in many cases, the finding of violation are incredibly subjective and even arbitrary, there is no way for operators to predict penalties prior to the issuance of a citation. Since the penalty assessment costs cannot be estimated in advance, they cannot be factored into decisions about investments in accident prevention programs. Therefore, the effectiveness of penalties as an incentive for compliance is either minimal or non-existent. In this regard, it is of little surprise that MSHA’s prediction that the recent increased penalties would result in fewer citations being issued has not materialized – citations for non-compliance were 15% higher in 2007 despite the higher penalties.<sup>188</sup>

### 3. Adversarial Means Uninformed

The one change that has resulted from MSHA’s renewed emphasis on punishment following the Sago disaster is an increase in cases filed before the Commission. Since March 2007, when the penalty increase was implemented, the percentage of cases involving citations being contested has risen from about 5% to well over 20%.<sup>189</sup> This consequence, which MSHA completely failed to consider in its civil penalty rulemaking, was totally predictable. The system created by the Coal Act and modified by the Mine Act, which required penalties first instance violations, intended that the citation itself be a form of punishment.<sup>190</sup> By raising the penalty for a low gravity violations from \$60 to \$600 in many instances and \$6000 in some instances,<sup>191</sup> MSHA created financial incen-

<sup>187</sup> 30 C.F.R. § 100.4 (2008).

<sup>188</sup> MINE SAFETY AND HEALTH ADMIN., U.S. DEP’T OF LABOR, MINE SAFETY AT A GLANCE (2008), available at <http://www.msha.gov/mshainfo/factsheets/mshafact10.htm> [hereinafter MINE SAFETY AT A GLANCE]; see also CNNMoney.com, Coal Producers Say Regulations Cutting Production (Sept. 2, 2008), available at <http://money.cnn.com/news/newsfeeds/articles/apwire/f331e003e44e4cea0533197fac5b600e.htm> (last visited Oct. 1, 2008) (indicating that MSHA citations are up another eight percent more citations in 2008).

<sup>189</sup> MINE SAFETY AND HEALTH ADMIN., U.S. DEP’T OF LABOR, NUMBER OF PENALTIES ASSESSED AND PERCENT CONTESTED JANUARY 2005 – JUNE 2008 (2008), available at <http://www.msha.gov/STATS/ContestedCitations/Civil%20Penalties%20Assessed%20and%20Contested.pdf>.

<sup>190</sup> See *Sewell Coal Co.*, 686 F.2d 1066 (4th Cir. 1982) (Widner, J., dissenting) (“A fine must be said to be an adverse consequence of considerable import regardless of its amount.”).

<sup>191</sup> Under MSHA’s prior civil penalty rule, all non S&S violations were assessed a \$60 fine. 30 C.F.R. 100.4 (2006). Under MSHA’s new civil penalty conversion table, there are a number of point combinations by which an operator could be fined \$6,000 for a citation that was designated non S&S. 30 C.F.R. § 100.4. See, e.g., Michael T. Heenan, *Inspector Decisions You Pay For*, PIT

tives for operators to challenge the subjective findings made by the MSHA inspectors.<sup>192</sup> For the first time in history, the mine safety and health bar can now litigate cases against MSHA with a reasonable opportunity of having penalty savings exceed legal fees.

The complicated system of punishment would be laughable, if it did not come at a heavy price. The operator's fear of compliance liability eliminates the dialogue between the operator and the government regarding safety.<sup>193</sup> Because MSHA inspectors are required by law to penalize the operator for first instance violations and, in certain circumstances, shut down the areas of the mine,<sup>194</sup> the inspectors are seldom privy to the safety concerns of the mine operator. In many cases, the only information provided to the inspector by the mine operator is the information that is required to be provided by law.<sup>195</sup> Just like taxpayers do not turn to the IRS for accounting advice, mine operators do not look to MSHA inspectors for safety advice.

The ever-present prospect of enforcement impairs the flow of information from MSHA as well. For example, following the Crandall Canyon disaster, MSHA argued "that allowing the media to be present during the interviews may damage the integrity of the investigation by conveying . . . information regarding potential civil or criminal violations."<sup>196</sup> Thus, because punishment pits government and industry as legal adversaries, it impairs the government's ability to affect safety with information.

The market approach to mine safety depends on fully informed market participants. Traditionally, the dominant information provider has been the federal government. As long as the government and the industry are pitted as adversaries over subjective determinations on a piece of paper, the government will be less able to affect safety with information.

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& QUARRY, January 1, 2008, *available at* <http://www.pitandquarry.com/pitandquarry/Law/Inspector-decisions-you-pay-for/ArticleStandard/Article/detail/484473>.

<sup>192</sup> Michael T. Heenan, *Challenges to Civil Penalties*, PIT & QUARRY, July 9, 2008, *available at* <http://www.pitandquarry.com/pitandquarry/Features/Challenges-to-civil-penalties/ArticleStandard/Article/detail/528676> ("When penalties were lower, they might decide to pay the penalties and move on. Today, operators are finding that such an approach does not work.")

<sup>193</sup> BRAITHWAITE, *supra* note 59, at 99 ("The threat of punishment can have a chilling effect on the information-gathering process.")

<sup>194</sup> 30 U.S.C. § 817(a) (2008).

<sup>195</sup> MARK N. SAVIT, *DO I HAVE TO GIVE THEM THAT? A PRIMER ON DOCUMENTS* (2003), *available at* <http://www.pattonboggs.com/news/detail.aspx?news=162> ("First, before you decide whether or not to produce the documents [to MSHA], you must carefully review the documents to determine the consequences of their production. If all of the information contained in the documents is favorable, you may wish to provide them. If not, you may wish to explore other options.")

<sup>196</sup> Salt Lake Tribune Kearns Tribune, LLC v. Chao, No. 2:07-CV-739, slip. op. at 8 (D. Utah Oct. 9, 2007).

## X. FORCED-COMPLIANCE AND SCARCE RESOURCES

In the Sago mine disaster, twelve people died. There is no dispute about the magnitude of the tragedy or its devastating impact on the families, friends and communities of the deceased miners. In any discussion of public policy, however, it is essential to dehumanize the tragedy. It is essential to view each loss of life as a statistic, not as a person. Even though every statistic represents a person, putting faces on the numbers, as some have argued,<sup>197</sup> leads down the slippery slope of having to compare the value of human lives. Does an adult coal miner deserve more government resources than a child with cancer? Or, assuming that the discussion is arbitrarily confined to the allocation of resources to protect workers, do coal miners deserve more government resources than truck drivers or fishermen? These rhetorical questions exemplify the necessity of dehumanizing the problem.

To avoid comparisons between coal miners and other persons on a human level, some have proposed that dedicating government resources to coal mine safety is important from an energy policy perspective. Currently, coal powers 50% of the electricity generating facilities in the United States. Coal resources in the United States are abundant and do not present the same geopolitical risks as oil. Therefore, the argument goes, it is essential to keep mines safe in order to protect society's supply of electricity.<sup>198</sup> Because miners do this important work, the government ought to protect them. The problem with this approach is that it is still based on values. Without loggers, for example, there would be no paper with which to commit the debate to writing.

Once free of the constraints of value judgments, it is possible to compare the benefits of the forced-compliance approach to the costs of the forced-compliance approach. As might be expected based on the inherent defects in the forced-compliance model, the marginal or non-existent benefits certainly do not outweigh the very substantial costs. Because there are uncertain benefits and certain costs, advocates of the forced-compliance model should bear the burden of proving that resources should continue to be committed to command and control style regulation.

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<sup>197</sup> See Patrick McGinley, *Pits and the Pendulum: Mine Safety Law Enforcement and Behavior Modification in American Coal Mines*, Thinking Outside the Box: A Post-Sago Look at Coal Mine Safety, <http://lawschoolcoalconference.event.wvu.edu/> (last visited Sept. 5, 2008) (symposium webcast available).

<sup>198</sup> See e.g. H.R. REP. NO. 91-563, at 2507 (1969) ("Coal is our most abundant fuel resource. Right now, it supplies nearly a fourth of our total energy demand and every forecast, whether by Government or the private sector, indicates that coal must continue to play a significant role if this country's future energy requirements are to be satisfied."); see also Lofaso, *supra* note 1, at 1.

*A. Uncertain Benefits*

The popular perception, as evidenced by post-Sago legislative and regulatory action, is that forced-compliance improves mine safety. However, there is a dearth of evidence to support the popular perception. If there is any safety benefit resulting from forced-compliance, it is almost certainly a very small one in terms of lives saved.

With respect to newly proposed regulations, MSHA often attempts to calculate the benefit of the regulation in terms of lives saved. For example, MSHA predicts that one of the new post-Sago requirements, installing refuge chambers in underground coal mines, will save between 0.5 to 1.5 lives per year.<sup>199</sup> The huge problem with MSHA's generous estimate is that the agency relied on data that went back to 1900 when explosions were common and, therefore, is based on lives that are no longer in danger today. The dubiousness of the 1.5 lives saved estimate is obvious given that there are only about 30 lives per year that remain to be saved in the entire coal mining industry (surface and underground) and only 14% of those underground lives are lost due to explosions or fires.<sup>200</sup> In addition, MSHA's calculation does not factor into the estimate any potential loss of lives resulting from the rule, which may result from the work involved with getting the chambers underground or from the risk compensation created by the perception of potentially improved rescue outcomes.<sup>201</sup> Despite these substantial shortcomings, MSHA's effort is nonetheless an attempt to quantify the benefit of a safety regulation, which is certainly a step in the right direction.

With respect to the older MSHA coal mine safety regulations, however, there are no attempted benefit estimates. Most of MSHA's rules were promulgated at a time when it was simply assumed that regulations were beneficial.<sup>202</sup> Even though the purported benefit of these rules has never been examined on an individual basis, MSHA has inferred a benefit from their enforcement based on aggregate fatality trends, which show that coal mine fatalities have declined

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<sup>199</sup> Refuge Alternative for Underground Coal Mines, 73 Fed. Reg. 116, 34164 (June 16, 2008) (to be codified at 30 C.F.R. pts. 7 and 75).

<sup>200</sup> MSHA, U.S. DEP'T OF LABOR, NUMBER AND DISTRIBUTION OF MINING FATALITIES BY WORK LOCATION BY TYPE OF INCIDENT 2001-2005, available at <http://www.cdc.gov/niosh/mining/statistics/images/cb6.gif>.

<sup>201</sup> See TESTIMONY OF MICHAEL PEELISH, *supra* note 128, at 3 ("It is not sound safety practice to encourage a false sense of security."); see also Metzgar, *supra* note 25.

<sup>202</sup> All of the original underground coal mine safety standards would have escaped regulatory analysis because they were based on standards enacted by Congress. See e.g., 30 U.S.C. 861-77 (2006). Moreover, and in any event, regulatory analysis did not get started until after 1974, at which time most of the underground coal standards were already codified. Furthermore, nearly all of the coal mine safety regulations would have escaped regulatory analysis because their individual impact on the economy is estimated not exceed \$100 million. See generally OFFICE OF MANAGEMENT AND BUDGET, REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS, available at <http://www.whitehouse.gov/omb/inforeg/chap1.html>.

since the Coal Act was enacted in 1969 and since the Mine Act was enacted in 1977.<sup>203</sup>

The obvious problem with MSHA's simplistic presentations, which fuel popular perception, is that coal mine fatalities also declined substantially prior to 1969, from 3242 in 1907 to 203 in 1969.<sup>204</sup> Some commentators have rebutted that the very steep pre-1969 decline is attributable to earlier coal mine safety laws, which became "progressively stronger."<sup>205</sup> The problem with this line of argument is that coal mine fatalities started to decline well before anything approximating modern forced-compliance was put into practice. Civil and criminal sanctions for first-instance violations were not introduced until 1969. Moreover, the two published empirical studies did not find any connection between increased federal regulatory powers and mine safety through 1965 or 1970.<sup>206</sup>

There have been a few empirical studies that have attributed a safety benefit to the 1969 Coal Act based on aggregate trends in injuries and/or fatalities. Lewis-Beck and Alford (1980)<sup>207</sup> and Weeks and Fox (1995)<sup>208</sup> attribute success to forced-compliance because the downward trend in coal mine injuries continued or accelerated after 1969. Neumann and Nelson (1982)<sup>209</sup> and Feuss and Loewenstein (1990)<sup>210</sup> infer an effect of forced-compliance on mine safety because injuries are lower in the post-MSHA period. Kneisner and Leeth (2003)<sup>211</sup> and Boden (1985)<sup>212</sup> have both correctly criticized the aggregated data

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<sup>203</sup> See e.g., MSHA, U.S. DEP'T OF LABOR, 25 YEARS OF SUCCESS, available at <http://www.msha.gov/MSHAInfo/25Years/MSHA%2025%20Years.pdf>; see also MINE SAFETY AT A GLANCE, *supra* note 188.

<sup>204</sup> Ruffennach, *supra* note 5, at 3, 7.

<sup>205</sup> J. Davitt McAteer, *The Federal Mine Safety and Health Act of 1977: Preserving a Law that Works*, 98 W. VA. L. REV. 1105, 1110 (1996) ("Progressively stronger coal mine safety legislation was enacted in 1941, 1952, 1969 and 1977. Legislation addressing safety in metal and non-metal mines was enacted in 1966 and 1977. The connection between stronger laws and safer mines has been carefully documented by scholars").

<sup>206</sup> See William H. Andrews & Charles L. Christenson, *Some Economic Factors Affecting Safety in Underground Bituminous Coal Mines*, 40 S. ECON. J. 364 (1974); see also Thomas S. Witt, Catherine P. Palombra & Neil A. Palombra, Comment, *Some Economic Factors Affecting Safety in Underground Bituminous Coal Mines*, 42 S. ECON. J. 306 (1975).

<sup>207</sup> Michael S. Lewis-Black & John R. Alford, *Can Government Regulate Safety? The Coal Mine Example*, 74 AM. POL. SCI. REV. 745, 745-56 (1980).

<sup>208</sup> James L. Weeks & Maier Fox, *Fatality Rate and Regulatory Policies in Bituminous Coal Mining, United States, 1951-1981*, 73 AM. J. PUB. HEALTH 1278, 1278-80 (1983).

<sup>209</sup> See generally George R. Neumann & Jon P. Nelson, *Safety Regulation and Firm Size: Effects of the Coal Mine Health and Safety Act of 1969*, XXV J. LAW AND ECON. 183 (1982).

<sup>210</sup> Scott M. Feuss, Jr. & Mark A. Loewenstein, *Further Analysis of the Theory of Economic Regulation: The Case of the 1969 Coal Mine Health and Safety Act*, 28 ECON. INQUIRY 354, 354-89 (1990).

<sup>211</sup> Thomas J. Kneisner & John D. Leeth, *Data Mining Mining Data: MSHA Enforcement Efforts, Underground Coal Mine Safety, and New Health Policy Implications*, 29 J. RISK & UNCERTAINTY 83, 83-111 (2004).

approach because it does not account for the general background trend in mine injuries/fatalities and because it does not account for the affect of other historical variables that also affect mine safety.

Kniesner and Leeth avoid some of the problems associated with looking at aggregated trends by using an econometric regression analysis. Although Kniesner and Leeth did find a safety benefit associated with the forced-compliance of mine safety regulations, it is essential to keep in mind that their analysis was “deliberately biased upwards, so as to find maximal MSHA effects.”<sup>213</sup> With the limited exception of their “cherry picked results,” they noted that “the results in the overwhelming number of cases are unfavorable to the safety enhancement objective of MSHA at current levels of regulation.”<sup>214</sup>

The other important criticism of the empirical studies is that they focus on fatality rates that are not representative of safety in the coal mining industry.<sup>215</sup> Although the fatalities per 100,000 workers is a rate that is widely accepted for comparisons between industries, it is not always a reliable measure of intra-industry safety progress.<sup>216</sup> In this regard, there is no dispute that, pre-1969, the flat trend in fatality rates per miner diverged substantially from the steep downward trend in coal miner fatalities in absolute numbers.<sup>217</sup> The divergence suggests that the fatalities per 100,000 miners rate did not accurately capture the safety progress in the coal mining industry.

Although it has not been studied, it is likely that the unfavorable trend in fatalities per 100,000 miners pre-1969 and the favorable trend in fatalities per 100,000 miners post-1969 primarily reflect changes in coal production and/or productivity. In this regard, Neumann and Nelson noted that “output per man-hour is significantly lower in the post-1970 period.” In 1983, Sider also found a “severe” decline in productivity post-1969 and only a “small and statistically insignificant negative decline in accidents.”<sup>218</sup>

Thus, the better measure of mine safety progress is the fatalities per million tons rate, as suggested by Braithwaite.<sup>219</sup> The fatalities per million tons rate

<sup>212</sup> Boden’s use of a model designed to study felonious criminal behavior is not appropriate to study safety regulation enforcement since safety regulation enforcement is primarily directed at negligent behaviors, not intentional ones. *See generally* Leslie I. Boden, *Government Regulations of Occupational Safety: Underground Coal Mine Accidents 1973-75*, 75 AM. J. PUB. HEALTH 497 (1985).

<sup>213</sup> Kniesner, *supra* note 211, at 84.

<sup>214</sup> *Id.* at 97.

<sup>215</sup> Ruffennach, *supra* note 5, at 15-17.

<sup>216</sup> *See* Maury Gittleman & Brooks Pierce, *A Different Approach to Measuring Workplace Safety: Injuries and Fatalities Relative to Output*, BUREAU OF LABOR STATISTICS, July 26, 2006, available at <http://www.bls.gov/opub/cwc/sh20060724ar01p1.htm>.

<sup>217</sup> MSHA, U.S. DEP’T OF LABOR, NUMBER OF FATALITIES AND FATALITY RATES IN THE MINING INDUSTRY BY COMMODITY, 1931-2005, available at [http://www.cdc.gov/niosh/mining/statistics/pdfs/f\\_hist\\_1.pdf](http://www.cdc.gov/niosh/mining/statistics/pdfs/f_hist_1.pdf).

<sup>218</sup> Sider, *supra* note 38, at 225-33.

<sup>219</sup> BRAITHWAITE, *supra* note 59, at 176.

directly compares coal mine output to coal mine fatalities. As such, it is the best measure for those who have the dual concerns of energy policy and miner safety. In this regard, Sider has reported that injuries per million tons of coal mined “fell during the 1960s but rose quite rapidly during the 1970s.”<sup>220</sup> The implication is that the actual impact of the 1969 Coal Act on mine safety was unfavorable.

Thus, neither MSHA’s own analysis nor the limited available empirical studies reliably support the conclusion that forced-compliance has provided a measurable net safety benefit. The absolute best thing that can be said about the benefits of the forced-compliance approach is that they are unknown.

### B. *Certain Costs*

While the benefit of forced-compliance has never been established, the cost of forced-compliance is undisputable. Although not all of the costs have been quantified and measured, the costs certainly do exist.

The most obvious cost of forced-compliance is MSHA’s budget. MSHA’s total budget for fiscal year 2008 is \$313.5 million.<sup>221</sup> Seventy percent of the budget, about \$215 million, was committed to the agency’s forced-compliance function. MSHA collected \$75 million in penalties in calendar year 2007 across all mining industries. Essentially, the net cost of MSHA’s enforcement program to taxpayers is around \$140 million.<sup>222</sup> One way to look at this amount is that taxpayers spend \$3,120 to find just one condition that might be reasonably expected to lead to an injury at a mine.<sup>223</sup>

In addition to the cost of enforcement borne by taxpayers, there is also a more substantial, but harder to quantify, cost on mine operators. There is no estimate of the industry’s total cost of complying with MSHA’s coal regulations. As stated above, most MSHA rules pre-date the requirements for cost-benefit analysis. The costs of compliance with MSHA’s regulations are very substantial.<sup>224</sup> The total industry-wide costs are certainly measured in billions of

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<sup>220</sup> Sider, *supra* note 38, at 16.

<sup>221</sup> News Release from U.S. Department of Labor, Office of Public Affairs, FY 2008 Proposal to Boost Funding for U.S. Dep’t of Labor’s MSHA by 13 Percent Over Current Funding Level to \$313.5 Million (February 5, 2006), *available at* <http://www.msha.gov/media/press/2007/nr070205.pdf>.

<sup>222</sup> The \$140 million figure is under-estimated to the extent that it does not include amounts in the Department of Labor’s budget, including the Federal Mine Safety and Health Review Commission, or MSHA’s administrative costs. The number is over-estimated to the extent that it includes amounts dedicated exclusively to health enforcement.

<sup>223</sup> MINE SAFETY AT A GLANCE, *supra* note 188 (author’s calculation: \$140 M/(144,735\*.31)).

<sup>224</sup> CNNMoney.com, *supra* note 188 (“Patriot Coal recently told Wall Street analysts that MSHA enforcement has increased costs as much as \$1.25 per ton. In the second quarter, for instance, Patriot’s per ton costs jumped more than 8.6 percent.”).

dollars.<sup>225</sup> For example, just the three new rules following the Sago disaster<sup>226</sup> are conservatively estimated by MSHA to cost the coal mining industry over \$100 million annually: \$45 million for seals,<sup>227</sup> \$41 million for refuge chambers,<sup>228</sup> and \$18 million for emergency mine evacuation.<sup>229</sup>

It is worth mentioning that not all of the compliance costs associated with MSHA regulations should be attributed to the forced-compliance model. In a free market, mine operators would meet some of the regulatory requirements voluntarily. For example, following the Sago disaster, some underground coal mine operators may have purchased refuge chambers to lower risk premiums that may have risen due to changed perceptions about mining risks after the disaster. Thus, the cost of a regulation should primarily include the class of actions that would not be taken unless compelled by law.

The cost of abating citations would certainly be one component of this class. Every citation issued by MSHA represents a difference of opinion between the government and the operator as to how capital should be allocated. The existence of a citable condition in a mine implies that the operator did not perceive the condition as posing a serious risk to safe production. Notably, it can be inferred that MSHA agrees with the operator's implied determinations most of the time from the fact that about 60% of the violations issued by MSHA are designated not reasonably likely to result in a serious injury.<sup>230</sup> One of the greatest ironies of the Mine Act is that the operator is still required to immediately divert resources from safe production to abatement of each and every one of the alleged violations, even though there is an admittedly minimal potential for an injury avoidance benefit.

In addition to abatement, the other costs of noncompliance are also worth mentioning. Coal operators paid \$53 million in penalties to MSHA in

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<sup>225</sup> Joseph M. Johnson, *A Review and Synthesis of the Cost of Workplace Regulation* (Mercatus Center, Geo. Mason U., Working Paper, Aug. 30, 2001); JOSEPH M. JOHNSON, *A REVIEW AND SYNTHESIS OF THE COST OF WORKPLACE REGULATIONS* 21 (George Mason Univ. 2001) (estimating 2001 costs associated with Mine Act regulations at \$7.4 billion).

<sup>226</sup> The new belt air rule adopted in large part as a response to the Aracoma disaster is estimated at \$52 million annually, which is in addition to the 100 million in annual costs attributable to changes after Sago. *See* Safety Standards Regarding the Recommendations of the Technical Study Panel on the Utilization of Belt Air and the Composition and Fire Retardant Properties of Belt Material in Underground Coal Mining, 73 Fed. Reg. 119, 35046 (June 19, 2008) (to be codified at 30 C.F.R. pts. 6, 14, 18, 48, 75).

<sup>227</sup> Sealing of Abandoned Areas, 73 Fed. Reg. 76, 21182, 21204 (Apr. 18, 2008) (to be codified at 30 C.F.R. pt. 75).

<sup>228</sup> Refuge Alternatives for Underground Coal Mines, 73 Fed. Reg. 116, 34165 (June 16, 2008) (to be codified at 30 C.F.R. pts. 7, 75).

<sup>229</sup> Emergency Evacuation, 71 Fed. Reg. 41, 12251 (March 9, 2006) (to be codified at 30 C.F.R. pt. 75).

<sup>230</sup> MINE SAFETY AT A GLANCE, *supra* note 188; *see also* INTERNAL REVIEW *supra* note 49, at 21.

calendar year 2007.<sup>231</sup> The more significant noncompliance costs result from the diversion of resources from production, which are associated with closure orders and with accompanying and accommodating MSHA inspectors during inspections. Operators also incur costs, including legal fees, when they contest MSHA violations. The real and opportunity costs associated with litigating over “shades of gray” should not be underestimated.<sup>232</sup>

It is important to emphasize that the costs imposed on mine operators are ultimately transferred to consumers.<sup>233</sup> Contrary to popular perception, the costs are not distributed to the shareholders of mining companies. Because most coal is used for electrical generation, the consumers typically pay the price of forced-compliance in the form of higher electricity costs. Neither the amount of these costs nor their impact on individual consumers has been estimated.

### C. *Negative Net Value*

Given that there are uncertain benefits and certain costs, it is certainly fair to ask whether the forced-compliance approach is worth continuing. Although advocates of forced-compliance shy away from the cost-benefit analysis, the almost certain cost-ineffectiveness of the Mine Act imposes potentially tremendous opportunity costs on society.

Advocates of forced-compliance have suggested that the burden should be on the critics of the regulatory approach to prove that the forced-compliance of mine safety regulations is not cost-effective.<sup>234</sup> Of course, a reverse burden of proof is contrary to modern practice, whereby the regulator is required to assess the cost benefit of a rule prior to its promulgation.<sup>235</sup> In the case of the Mine Act, a reverse burden of proof also gives Nixon-era decisions the benefit of the doubt, even though there was no science underlying those decisions. This essentially creates a conundrum whereby society is perpetually bound by questionable policy decisions made in the 1970s. It is more appropriate to put the

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<sup>231</sup> MINE SAFETY AT A GLANCE, *supra* note 188.

<sup>232</sup> Testimony of William G. Miles, Director of Loss Control, Newmont Gold Co., Elko, Nevada: *Hearing Before the Senate Comm. on Educ. and the Workforce*, 105th Con. (1998), available at <http://commdocs.house.gov/committees/edu/hedwp5-137.000/hedwp5-137.htm> (“[A]fter three years and nearly a million dollars in legal defense fees, MSHA’s unjustified policy change remains pending before the MSHA review Commission.”)

<sup>233</sup> See BRAITHWAITE, *supra* note 59 at 165 (“We have seen that in the United States, fines are . . . generally passed on in higher energy costs to the community as a de facto royalty on the cost of each ton of coal.”); see also *supra* note 224.

<sup>234</sup> See Alison Morantz, *Mining Mining Data: What Empirical Analysis Can Tell Us About Coal Mine Safety Regulation*, Thinking Outside the Box: A Post-Sago Look at Coal Mine Safety, <http://lawschoolcoalconference.event.wvu.edu/> (last visited Sept. 5, 2008) (symposium webcast available).

<sup>235</sup> OFFICE OF MGMT. AND BUDGET, REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS (1997), available at <http://www.whitehouse.gov/omb/inforeg/chap1.html>.

burden of proof on those who want to continue the appropriation of finite public resources for private causes.

Regardless of whether the advocates or the critics of forced-compliance bear the burden of proof, the evidence is mounting that forced-compliance with mine safety laws is not serving society's interest. Kniesner and Leeth, mentioned above, attempted to measure the cost-effectiveness of MSHA's enforcement activities. Using the highest values of life and injury and the least possible cost of an inspection, Kniesner and Leeth estimated that the cost of eliminating one injury through MSHA enforcement is \$463,966.<sup>236</sup> Given that the benefit from eliminating an injury is estimated at \$219,443, Kniesner and Leeth concluded that the "implied cost/benefit ratio for the most favorable case we can construct for MSHA is about 2.1 > 1."<sup>237</sup> They further estimated that the cost of eliminating one fatality through additional MSHA enforcement activities is a staggering \$100,865,530.<sup>238</sup> Put in the context of additional enforcement required, "the cost of eliminating one fatality would then be \$1.17 billion, which is over 10 times the annual enforcement budget."<sup>239</sup> In terms of opportunity costs, Kniesner and Leeth concluded "moving \$27.5 million from the MSHA enforcement budget into more heart disease screening or defibrillators would gain on balance 687,489 life years for the affected population, which is equivalent to about 39,700 statistical miners' lives."<sup>240</sup>

It is important to emphasize that Kniesner and Leeth only evaluated the direct costs of enforcement borne by taxpayers and not the additional cost of regulation borne by consumers. The compliance and noncompliance costs also present tremendous opportunity costs on society as well. For example, anecdotal accounts of the elderly and poor not turning on air conditioners during heat waves for fear of higher electric bills suggest just one possible opportunity cost that may be associated with the forced-compliance of mine safety regulation.<sup>241</sup> Perhaps the 30 heat related deaths mentioned at the beginning of the article could have been avoided with lower electricity costs. Just like mine operators, society is not immune from the potential for adverse consequences of risk-for-risk trade-offs. Therefore, prudence and caution dictate a full accounting of the costs and benefits of forced-compliance of mine safety regulations before the expenditure of finite public resources is permitted to continue.

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<sup>236</sup> Kniesner, *supra* note 211, at 102.

<sup>237</sup> *Id.*

<sup>238</sup> Kniesner, *supra* note 211, at 103.

<sup>239</sup> *Id.*

<sup>240</sup> Kniesner, *supra* note 211, at 105.

<sup>241</sup> See generally Hector Becerra, Tami Abdollah, & Carla Hall, *For Heat's Victims, a Quiet Death*, LOS ANGELES TIMES, Sept. 6, 2007 at A-1, available at <http://articles.latimes.com/2007/sep/06/local/me-deaths6> ("When your electricity costs as much as your food does, and that's the only amount of money you have coming in, a lot of people around here choose to eat rather than to stay cool.")

## XI. CONCLUSION

The Sago mine disaster shows that lawyers do not and cannot make mines safer. Command and control regulation is simply the wrong tool for the job. Central planning and periodic government oversight are too cumbersome for a dynamic industry like mining where conditions change by the minute. The preoccupation with meting out minor punishments for subjective infractions only serves to diminish the government's important role in developing and distributing safety-related information. Ultimately, it is information, in the hands of self-interested individuals in the mining industry, that makes mining safer. The government should trust that the freely made decisions of informed miners and mine operators, in the aggregate, will fairly and accurately reflect society's strong preference for safe coal mines.