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Job Safety

W. Kip Viscusi

■ Many people believe that employers do not care whether their workplace conditions are safe. If the government were not regulating job safety, they contend, workplaces would be unsafe.

In fact, employers have many incentives to make workplaces safe. Since the time of Adam Smith, economists have observed that workers demand "compensating differentials" (that is, wage premiums) for the risks they face. The extra pay for job hazards in effect establishes the price that employers must pay for an unsafe workplace. Wage premiums paid to U.S. workers for risking injury are huge—they amount to about \$120 billion annually, which is over 2 percent of the gross national product, and over 5 percent of total wages paid.

These wage premiums give firms an incentive to invest in job safety because

an employer who makes his workplace safer can reduce the wages he pays. Employers have a second incentive because they must pay higher premiums for workers' compensation if accident rates are high. And the threat of lawsuits over products used in the workplace gives sellers of these products another reason to reduce risks.

Of course, the threat of lawsuits gives employers an incentive to care about safety only if they anticipate the lawsuits. In the case of asbestos litigation, for example, liability was deferred by several decades after the initial exposure to asbestos. Even if firms were cognizant of the extent of the health risk, which many were not, none of them could have anticipated the shift in legal doctrine that, in effect, imposed liability retroactively. Thus, it is for acute accidents

rather than diseases that the tort liability system bolsters the safety incentives generated by the market for safety.

How well does the safety market work? For it to work well, workers must have some knowledge of the risks they face. And they do. One study of how 496 workers perceived job hazards found that the greater the risk of injury in an industry, the higher the proportion of workers in that industry who saw their job as dangerous. In industries with five or fewer disabling injuries per million hours worked, such as women's outerwear manufacturing and the communication equipment industry, only 24 percent of surveyed workers thought their jobs to be dangerous. But in industries with forty or more disabling injuries per million hours, such as logging camps and the meat products industry, 100 percent of the workers knew that their jobs were dangerous. That workers know the dangers makes sense. Many hazards, such as visible safety risks, can be readily monitored. Moreover, some dimly understood health risks are often linked to noxious exposures and dust levels that workers can monitor. Also, symptoms sometimes flag the onset of some more serious ailment. Byssinosis, for example, a disease that workers exposed to cotton dust often get, proceeds in stages.

Even when workers are not well informed, they do not necessarily assume that risks are zero. According to a large body of research, people systematically overestimate small risks and underestimate large ones. If workers overestimate the probability of an injury that occurs infrequently—for example, exposure to a highly publicized potential carcinogen, such as second-

hand smoke—then employers will have too great an incentive to reduce this hazard. The opposite is also true: when workers underestimate the likelihood of more frequent kinds of injuries, such as falling and motor vehicle accidents on the job, employers may invest too little in preventing those injuries.

The bottom line is that market forces have a powerful influence on job safety. The \$120 billion in annual wage premiums referred to earlier is in addition to the value of workers' compensation. Workers on moderately risky blue-collar jobs, whose annual risk of getting killed is 1 in 10,000, earn a premium of \$300 to \$500 per year. The imputed compensation per "statistical death" (10,000 times \$300 to \$500) is therefore \$3 million to \$5 million. Even workers who are not strongly averse to risk and who have voluntarily chosen extremely risky jobs, such as coal miners and firemen, receive compensation on the order of \$600,000 per statistical death.

These wage premiums are the amount that workers insist on being paid for taking risks. In other words, the wage premiums are the amount that workers would willingly forgo to avoid the risk. Employers will eliminate hazards only when it costs less to do so than what they will save in the form of lower wage premiums. For example, if eliminating a risk costs the employer \$10,000 but allows him to pay \$11,000 less in wages, he will do so. Costlier reductions in risk are not worthwhile to employees (since they would rather take the risk and get the higher pay) and are not voluntarily undertaken by employers.

Other evidence that the safety market

works comes from the decrease in the riskiness of jobs throughout the century. One would predict that as workers become wealthier they will be less desperate to earn money and will therefore demand more safety. The historical data show that that is what employees have done, and that employers have responded by providing more safety. As per capita disposable income per year rose from \$1,085 (in 1970 prices) in 1933 to \$3,376 in 1970, death rates on the job dropped from 37 per 100,000 workers to 18.

Despite this strong evidence that the market for safety works, not all workers are fully informed about the risks they face. They are particularly uninformed about little-understood health hazards that have not yet been called to their attention. But even where workers' information is imperfect, additional market forces are at work. Survey results indicate that of all workers who quit manufacturing jobs, over one-third do so when they discover that the hazards are greater than they initially believed. Losing employees costs money. Companies must train replacements, and production suffers while they do so. Companies, therefore, have an incentive to provide a safe work environment, or at least to inform prospective workers of the dangers. Although the net effect of these market processes does not always ensure the optimal amount of safety, the incentives for safety are substantial.

Beginning with the passage of the Occupational Safety and Health Act of 1970, the federal government has attempted to augment these safety incentives, primarily by specifying technological standards for workplace design. These government at-

tempts to influence safety decisions formerly made by companies generated substantial controversy. In some cases, these regulations have imposed huge costs. A particularly extreme example is the 1987 OSHA formaldehyde standard, which imposed costs of \$72 billion for each life that the regulation is expected to save. Because the U.S. Supreme Court has ruled that OSHA regulations cannot be subject to a formal cost-benefit test, there is no legal prohibition against regulatory excesses. However, OSHA sometimes takes account of costs while designing regulations.

Increases in safety from OSHA's activities have fallen short of expectations. According to some economists' estimates OSHA's regulations have reduced workplace injuries by at most 2 to 4 percent. Why such a modest impact on risks? One reason is that the financial incentives for safety imposed by OSHA are comparatively small. Although total penalties assessed by OSHA have increased dramatically since 1986, they have averaged less than \$10 million per year for most years of the agency's operation. The \$120 billion wage premium that workers "charge" for risk is over 1,200 times as large.

The workers' compensation system that has been in place in the United States throughout most of this century also gives companies strong incentives to make workplaces safe. Premiums for workers' compensation, which employers pay, exceed \$50 billion annually. Particularly for large firms, these premiums are strongly linked to their injury performance. Statistical studies indicate that in the absence of the workers' compensation system, workplace death rates would rise by 27 percent. This esti-

mate assumes, however, that workers' compensation would not be replaced by tort liability or higher market wage premiums. The strong performance of workers' compensation, particularly when contrasted with the command-and-control approach of OSHA regulation, has led many economists to suggest that an injury tax be instituted as an alternative to the current regulatory standards.

The main implication of economists' analysis of job safety is that financial incentives matter. The remaining task for society is to establish a reasonable balance in our quest for appropriate levels of workplace health and safety.

—W. Kip Viscusi

Biography: W. Kip Viscusi is the George G. Allen Professor of Economics at Duke University. While a student at Harvard he spent two summers working for Ralph Nader. Viscusi was also deputy director of President Carter's Council on Wage and Price Stability, which was responsible for White House oversight of major new regulations.

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