U.S. Senate
Committee on Health, Education, Labor and Pensions

April 27, 2010 Hearing

Putting Safety First: Strengthening Enforcement and Creating a Culture of Compliance at Mines and Other Dangerous Workplaces

Response to Questions for the Record
From
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May 19, 2010

Question for the Record from Senator Harkin

- *Question:* *Your 2008 study illustrates that companies do not need to make the choice between workplace safety and making a profit. In addition to the example provided at the hearing, what are other examples of cost-effective innovations and practices that employers should adopt to help cultivate a culture of safety?*

Response: The new AIHA Value Strategy is a decision logic and framework to help industrial hygienists organize their thinking as they develop a business argument to support their control measures or IH program recommendations. The output of this business case is a value proposition that simply summarizes the benefits that the decision maker will realize by approving a new proposal, augmenting an existing program, or continuing the existing activity without change. The decision maker's approval reflects their willingness to invest resources, typically people and budgets, in the IH program or activity to accrue the stated benefit. In its simplest form, that is all the strategy represents—a framework to logically develop a business case and support it with relevant financial and non-financial information.

An IH value proposition is the sum total of benefits that industrial hygienists will return to customers for their investments. In making the value proposition, industrial hygienists demonstrate to the stakeholders of a business (senior executives, for example) that investing in an occupational hygiene program or hazard control measures will provide a return on that investment in the form of financial or other benefits. Strong value propositions deliver tangible results, such as increased revenues, decreased costs,

faster time to market, improved operational efficiency, increased capacity, improved employee morale, decreased employee absenteeism and turnover, higher quality, increased market share, and improved customer retention to name a few. In addition, value propositions connect the benefit of the project or program with the organization's financial strategy and business objectives.

I offer three examples to illustrate how the AIHA Value Strategy can help organizations protect worker health and safety.

Case 1, Eliminating Hazards Example: Pharmaceutical Compound Containment
In this case a pharmaceutical company was mixing, blending, and processing multiple compounds to create finished drug compounds. The compound ingredients were dispensed "by hand" resulting in worker exposure to the airborne dust particles created by mixing and blending. In addition, valuable raw material was being lost. The personal protective equipment (gloves, respirator, full body suit, booties) offered inadequate protection factors against the active drug compounds.

Industrial hygienists partnered with design engineers to automate compound dispensing and to install a ventilated enclosure around the dispensing machine to prevent the release of the contaminant into the workplace. The net result was to improve the accuracy of compound dispensing, eliminate product loss, product quality, reduce operational costs, improve worker health and safety by eliminating the exposure to the airborne drug compounds, decrease hazardous waste volume by 75%, and improve regulatory compliance. In addition, personal protective equipment was no longer required and the associated health and safety costs were eliminated. Financially, the payback period is less than one year, the internal rate of return (IRR) is 98% (higher is better), and the 5 year NPV of $28K (+NPV accept, -NPV reject).

Case 2, Chemical Plant: Furnace Repair
In this case study a chemical plant needed to repair a furnace while the process continued to operate because shutting down the manufacturing process would have resulted in an $8M - $15M operating loss. Performing the repair work with the furnace operating would place the workers at risk of heat stress from extreme heat, strenuous work, and injury from contact with hot objects The approach to this problem was to perform a detailed risk analysis to identify each of the potential health and safety hazards.

A team of process and maintenance engineers and workers collaborated with an industrial hygienist to consider each hazard and plan the repair work while implementing hazard controls. The work planning resulted in changes to the personal protective equipment used to protect against heat, dust, fumes, noise, physical contact with hot objects, administrative procedures in the form of work instructions and a work/rest regimen coupled with a cooling tent to limit worker exposure to extreme heat, and engineering controls to permit the repair work to be done using remote handling techniques. By combining the control measures—personal protective equipment, administrative measures, and engineering controls---the repair work was completed while the process was operating, no injuries or heat stress illness occurred, and the

plant avoided an operating loss of $8M - $15M that would have occurred had the process been shut down. This case illustrates the mutually beneficial outcomes for worker safety and business.

Case 3, Foundry: Scrap Metal Recycler

In this case study, a foundry uses scrap metal to cast engine blocks. Some of the scrap metal that serves as a raw material for the process was contaminated with lead compounds resulting in worker exposure to airborne lead and through unintentional ingestion of lead by inadequate housekeeping and personal hygiene. These exposures required that the employer implement a lead exposure control program to eliminate workplace lead exposure. This program required medical monitoring of blood lead levels, monitoring of airborne exposure levels to lead, worker training, and a variety of control measures to reduce worker exposure to lead compounds. In addition, the foundry was going to be required to make a large capital investment in local exhaust ventilation to control airborne lead exposure.

The solution to the occupational lead exposure involved industrial hygienists working with process engineers, procurement staff, operations managers, and contract managers to analyze the raw material supply chain and perform a risk assessment analysis of the supply chain and the foundry work process. The solution that was identified involved changing the raw material specifications to require suppliers to certify that the scrap metal was lead-free. Purchasing controls were implemented to prevent lead contaminated scrap metal from being used. And, to verify that the scrap metal was lead-free, the foundry implemented a quality control process in which “spot checks” of the scrap metal from each supply was sampled for lead contamination. Over time, medical monitoring and airborne sampling demonstrated that the changes made to the raw material specifications and eliminated lead from the scrap metal. As a result, the foundry was able to eliminate the lead exposure control program and they avoided the large capital investment in local exhaust ventilation to control the airborne lead.