

An ROI Case Study

Safety Incentive Program

National Steel

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This case was prepared to serve as a basis for discussion rather than to illustrate either effective or ineffective administrative and management practices. All names, dates, places, and organization have been disguised at the request of the author(s) or organization.

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This case addresses measuring the effectiveness of an HR incentive program designed to influence employee behavior and to reduce accidents in a manufacturing environment. Although top executives were concerned about the safety and well-being of employees, they also wanted to reduce the cost of accidents. The cost of accidents was reaching the point that it was an obstacle to the company becoming a low-cost provider of products in a competitive industry. This case demonstrates that an evaluation of an HR intervention can be implemented with minimal resources. It also demonstrates that although some programs may achieve a return on investment, it is sometimes best to communicate the ROI results to a limited audience.

BACKGROUND

National Steel is a large manufacturing operation with divisions in the southeastern, southwestern, and midwestern United States. Each division has multiple plants. The company also has several foreign plants in operation and two others in the construction phase. The plants produce steel products such as bar stock and plate steel. They also fabricate specialized fasteners used in the commercial building industry. The nature of National's manufacturing business requires that safety always receives a top priority with management and the work force. The concern for employee safety is a significant issue. Additionally, domestic and foreign competition is a major factor in National's strategy to become a low-cost producer.

The company had always been always concerned about the human element of a safe work environment, but economic issues were now a significant concern being driven by the cost of accidents. The company had long had a group called the Central Safety Committee in place to continually review safety issues, direct accident investigations, and establish policy and best practices. The committee was made up of a senior line officer (who served as the sponsor), one line manager, two foremen, six members of the work force, the corporate manager of safety, and the VP of HR.

A PERFORMANCE PROBLEM

The committee had recently informed the senior management of National Steel that the midwestern division of the company was experiencing unacceptable accident frequency rates, accident severity rates, and total accident costs. For a two-year period, these costs had been around the \$400,000 to \$500,000 range annually—much too high for the Central Safety Committee and management to accept.

THE NEEDS ASSESSMENT

The safety manager was directed to meet with managers and employees in the three plants of the midwestern division to seek causes of the problem and to work with the division manager to implement the appropriate solutions. A team of HR specialists completed the assignment. They also analyzed the cost and types of accidents. The team of specialists concluded:

- Employees' safety habits were lax, and they were not focusing enough attention on safety.
- Employees knew and understood safety guidelines and practices; therefore training was not an issue.
- A significant number of accidents and accident-related costs involved injuries of a questionable nature.
- Some type of monetary incentive would likely influence employee behavior.
- Peer pressure could possibly be used to help employees focus on safety practices and on the need to avoid the costs of seeing a physician when it was unnecessary.

THE HR SOLUTION

As a result of the assessment, the team recommended that the division implement a group-based safety incentive plan at the three plants. A monetary incentive had been successful in another division during previous years. The division manager reviewed the details of the plan and even helped craft some of the components. He accepted the recommendations and agreed to sponsor the implementation. The two objectives of the recommended plan were:

1. To reduce the annual accident frequency rate from a level of 60 to a much lower level of approximately 20 or less.
2. To reduce the annual disabling accident frequency rate from a level of 18 to 0.

THE MEASURE OF SUCCESS

The HR team expressed the need to track certain measures on a continual basis. Once the incentive plan's objectives were established, the team identified the specific data needed to analyze safety performance. The measures identified were:

- Number of medical treatment cases
- Number of lost-time accidents
- Number of lost-time days
- Accident costs
- Hours worked
- Incentive costs

The team decided that data should be collected monthly. Because the data collection system had been in place before the implementation of the safety incentive plan, no additional data collection procedures were needed. The same system was also used by

the HR specialists when the Central Safety Committee asked them to review the problem and make recommendations. Management was also interested in a payback for the incentive program. Although accident reduction and severity were major concerns, there was also a need to achieve low-cost provider goals. Management requested to see figures that demonstrated that the benefits from the plan exceeded the costs of implementation. The team members concluded that they could use the same tracking system to determine the return on investment.

THE INCENTIVE PLAN

The incentive plan consisted of a cash award of \$75, after taxes, to each employee in the plant for every six months the plant worked without a medical treatment case. A medical treatment case was defined as an accident that could not be treated by plant first-aid and, therefore, needed the attention of a physician. Each plant had a work force of about 120 employees. A team effort at each plant was important because the actions of one employee could impact the safety of another. Peer pressure was necessary to keep employees focused and to remind them to avoid unnecessary physician costs. Therefore, the award was paid at each of the three plants independently. An award was not paid unless the entire plant completed a six-month period without a medical treatment case. When a medical treatment case occurred, a new six-month period began.

IMPLEMENTATION OF THE INCENTIVE PLAN

The plant managers implemented the plan at the beginning of the new year so results could easily be monitored and compared with performance in previous years. Each plant manager announced the plan to employees and distributed the guidelines for payout. The managers communicated the details of the plan and answered questions during the regular monthly safety meeting at each plant. Thorough communication ensured that each employee clearly understood how the plan functioned and what the group had to accomplish to receive an award.

COST MONITORING

Two groups of costs were monitored: the total accident costs and the incentive compensation costs. Total accident costs were monitored prior to the safety incentive plan as part of collecting routine safety performance data. The additional costs related directly to incentive compensation were also tabulated. Because the \$75 cash was provided after taxes, the cost to the division was approximately \$97.50 per employee for each six-month period completed without a medical treatment case. Additional administration costs were minimal because the data used in analysis were already collected prior to the new plan and because the time required to administer the plan and calculate the award was almost negligible. No additional staff was needed, and no overtime for existing staff could be directly attributed to the plan. However, a conservative estimate of \$1,600 per year of plan administration costs was used in the tabulation of incentive costs.

DATA COLLECTION AND ANALYSIS

In addition to the two-year data history, data were collected during a two-year period after the plan implementation to provide an adequate before-and-after comparison. Medical treatment injuries, lost-time injuries, accident frequency rates, and accident costs were all monitored to show the contribution of the safety incentive plan. The data shown in Table 1 document the accident costs for the four-year period. The data reveal significant reductions in accident costs for the two-year period after the implementation of the plan.

When comparing the average of years 3 and 4 (after the incentive plan) with the years 1 and 2 average (before the incentive plan), the accident frequency was reduced by 68 percent, while the disabling accident frequency was reduced by 74 percent. The annual cost of accidents (averaging the two years before and the two years after the incentive plan) dropped from \$523,244 to \$18,701, producing a significant savings of \$504,543.

Table 1
Accident Costs and Frequency for all 3 Plants

| | Year 1 Before Plan | Year 2 Before Plan | Year 3 After Plan | Year 4 After Plan |
|----------------------------|--------------------------|--------------------------|-------------------------|-------------------------|
| Accident Frequency | 61.2 | 58.8 | 19.6 | 18.4 |
| Disabling Frequency | 17.4 | 18.9 | 5.7 | 3.8 |
| Medical Treatment Injuries | 121 | 111 | 19 | 17 |
| Lost-Time Injuries | 23 | 21 | 6.8 | 5.2 |
| Actual Cost of Accidents | \$468,360 | \$578,128 | \$18,058 | \$19,343 |

The objective of the plan to reduce the annual accident frequency rate to less than 20 was met with a post-plan average of 19. The objective of reducing the annual disabling accident frequency rate from 18 to 0 was not achieved. Although the average after two years dropped significantly from 18.15 annually to 4.75 annually, this was still short of the target. Both calculations are shown below.

| | |
|---|----------------------|
| BEFORE INCENTIVE PLAN | AFTER INCENTIVE PLAN |
| Accident Frequency $61.2 + 58.8 = 120$ | 19.6 + 18.4 = 38 |
| Annual Average ($\div 2$) = 60 ANNUALLY | = 19 ANNUALLY |
| Annual Improvement $60 - 19 = 41$ | |
| % Accident Improvement $60 \rightarrow 41 = 68\%$ | |
| BEFORE INCENTIVE PLAN | AFTER INCENTIVE PLAN |
| Disabling Frequency $17.4 + 18.9 = 36.3$ | 5.7 + 3.8 = 9.5 |
| Annual Average ($\div 2$) = 18.15 ANNUALLY | = 4.75 ANNUALLY |
| Annual Improvement $18.15 - 4.75 = 13.4$ | |
| % Disabling Improvement $18.15 \rightarrow 13.4 = 74\%$ | |

These impressive results demonstrated a positive business impact. The incentive plan resulted in a safer work environment, fewer accidents, and fewer disabling accidents. Although these results improved the overall safety program considerably, the issue of cost savings remained unanswered. Did the incentive plan bring greater monetary benefits than the cost incurred to implement and administer it? Thus far, all costs have not been identified. Table 2 details the additional cost issues. There was also the issue of how much the incentive plan influenced improvement in the measures when compared with other actions that may have influenced improvements.

Table 2
The Contribution of the Safety Incentive Plan for All 3 Plants

| | Year 1 Before Plan | Year 2 Before Plan | Year 3 After Plan | Year 4 After Plan |
|---|--------------------------|--------------------------|-------------------------|-------------------------|
| Needs Assessment Costs (spread) | — | — | \$ 1,200 | \$ 1,200 |
| Plan's Annual Administration and Evaluation Costs | — | — | \$ 1,600 | \$ 1,600 |
| Safety Incentive Plan Payout Costs | — | — | \$58,013 | \$ 80,730 |
| Actual Cost of Accidents | \$468,360 | \$578,128 | \$18,058 | \$ 19,343 |
| Total Cost of Accidents and Prevention | \$468,360 | \$578,128 | \$78,871 | \$102,873 |

Plan implemented beginning in year 3

The needs assessment cost of \$2,400 consisted of capturing the time and travel expenses for the HR team to conduct twenty interviews with plant operations and management staff and to develop recommendations. The cost to administer the incentive plan was \$1,600 annually. The cost of the incentive plan payout must be captured and included in the total cost of accident prevention. Payout is determined by calculating the amount of incentive awards paid to employees in years 3 and 4. Table 3 provides a breakdown of the payout.

DATA INTERPRETATION AND CONCLUSION

The contribution of the safety incentive plan was determined by adding the accident and administrative costs for years 3 and 4 to the safety incentive plan payout costs and then comparing this total with the accident costs of years 1 and 2. As Table 2 shows, the total costs were reduced significantly. Accident costs from years 1 and 2 (see Table 2) totaled \$1,046,488, for an average of \$523,244 annually. Accident and prevention costs for years 3 and 4 totaled \$181,744, for an average of \$90,872 annually. This was an annual improvement of \$432,372.

Table 3
The Safety Incentive Plan Payout

| | | | | |
|------------------------------------|---------------------|-------------------------|----------------------------------|------------------|
| YEAR 3 | Plant 1 Payout | 115 employees @ \$97.50 | $115 \times 1 \text{ PAYOUT} =$ | \$11,213 |
| | Plant 2 Payout | 122 employees @ \$97.50 | $122 \times 2 \text{ PAYOUTS} =$ | \$23,790 |
| | Plant 3 Payout | 118 employees @ \$97.50 | $118 \times 2 \text{ PAYOUTS} =$ | \$23,010 |
| | Total Payout | | | \$58,013 |
| YEAR 4 | Plant 1 Payout | 115 employees @ \$97.50 | $115 \times 2 \text{ PAYOUTS} =$ | \$22,425 |
| | Plant 2 Payout | 122 employees @ \$97.50 | $122 \times 2 \text{ PAYOUTS} =$ | \$23,790 |
| | Plant 3 Payout | 118 employees @ \$97.50 | $118 \times 3 \text{ PAYOUTS} =$ | \$34,515 |
| | Total Payout | | | \$80,730 |
| Total Payout, Years 3 and 4 | | | | \$138,743 |

The Central Safety Committee discussed the issue of isolating the effects of the safety incentive plan. As a group, committee members decided the incentive plan should be credited for most of the improvement. They felt that it was the incentive plan that influenced a new safety awareness and caused peer pressure to work. After much debate, they accepted an estimate from the in-house expert, the manager of safety. The manager of safety brought forth data from an industry trade group that presented convincing evidence that management's attention to safe work habits had been shown to reduce the cost of accidents by 20 percent. Before these data were presented, the improvement was going to be attributed entirely to the incentive plan because no other

factors that could have influenced safety performance during this period had been identified. Also, the safety record at the other two divisions showed no improvement during the same time period.

CALCULATING THE RETURN ON INVESTMENT

To determine the return on investment, the costs and monetary benefits of the incentive plan were needed. The annual cost of incentive payouts (two-year average of \$69,372) added to annual administration costs (\$1,200 plus \$1,600) provided a total incentive plan cost of \$72,172. The benefits were calculated starting with the annual monetary benefits of \$432,372. Because the Central Safety Committee accepted the suggestion of the manager of safety—that management attention played a role in influencing the improvement (20 percent)—then an adjustment had to be made. Thus, 80 percent of \$432,372 resulted in an estimated impact of \$345,898. The ROI became:

$$\text{ROI} = \frac{\text{Net Benefits}}{\text{Costs}} = \frac{\$345,898 - \$72,172}{\$72,172} = 3.79 \times 100 = 379\%$$

COMMUNICATION OF RESULTS

The results of the safety incentive plan were communicated to a variety of target audiences to show the contribution of the plan. First, the division president summarized the results in a monthly report to the chief executive officer of the corporation. The focal point was on the reduction in accident frequency and severity, the reduction in costs, the improvement in safety awareness, and the return on investment for the incentive plan.

The HR department presented the results in its monthly report to all middle and upper division management with the same focus that was presented to the CEO. Return on investment information was reserved for the eyes of management because it was felt that employees might misunderstand this as being the focus of plant safety.

The results were presented to all plant staff members through the monthly *Safety Newsletter*. This communication focused on the reduction in medical treatment injuries, as well as improvements in lost-time accidents, disabling accidents, and accident frequency. It also commended employees for their accomplishments, as did all the communication.

Finally, the results were communicated to all division employees through the division newsletter. This communication focused on the same issues presented to plant staff members. Communications were positive and increased the awareness of the need for the continuation of the incentive plan.

QUESTIONS FOR DISCUSSION

1. What questions would you have asked during the needs assessment?
2. What are your thoughts about the way the Central Safety Committee decided to isolate the effects of the safety incentive plan?
3. What other alternatives could have been explored to isolate the effects?
4. Would you have sought approval to collect additional data from employees during the follow-up evaluation regarding what caused the improvements? Why would you want additional data? How would you have justified the cost of this additional work?
5. Were there additional costs that should have been included? Should the cost of communication be included?
6. How would you have communicated the results differently?
7. How credible is this study?