Improving Occupational Safety in a Large Industrial Plant
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Improving Occupational Safety in a Large Industrial Plant: A Systematic Replication

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SUMMARY. A replication of the injury prevention model developed by Sulzer-Azaroff and her colleagues was conducted in a large industrial plant to assess its generality and to measure the effect of targeting safety behaviors on accidents and lost time injuries. Approximately 225 employees in three departments participated. Safety behaviors were determined for each subunit and the dependent variable was the percent of safety achievements. A combined changing criterion and multiple baseline across groups design was used. The intervention consisted of feedback, reinforcement, and goal setting, with successively higher goals set for 4-5 week periods. Employees received weekly graphed feedback and praise, low-cost rewards following the first goal attainment and special rewards following the first goal attainment and special rewards.

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thereafter. Major celebrations followed 100% goal attainment. Safety performance improved steadily, generally matching or exceeding the increasing goals. Safety scores of 90%, 99% and 100% were achieved and accompanied by significant decreases in accidents and lost time injuries. Conservative estimates indicated a net annual savings of $55,500.

Behavioral approaches toward accident and injury reduction in the workplace have been demonstrating their promise since the late 1970s (e.g., see Sulzer-Azaroff, 1982, 1987 for reviews; Hopkins et al., 1986; Komaki, Barwick & Scott, 1978; Komaki, Heinzmann & Lawson, 1980; Rhoton, 1980).

Generally, investigators have taken one of two approaches: either pinpointing as the key dependent variable the reduction of reported accidents or lost time injuries (e.g., Hopkins et al., 1986) or focusing directly on unsafe practices on the job. In the former case, results have proven encouraging, as over the years, reported lost time injuries have been found to diminish as a function of the contingencies. Yet that arrangement tends to obscure whether recorded accidents have diminished as a result of alterations in the environment, reporting methods, or changes in performance patterns.

When the emphasis has been on safe performance, such performance has improved (Alavosius & Sulzer-Azaroff, 1986, in press; Komaki et al., 1978; Sulzer-Azaroff, 1978; Sulzer-Azaroff & de Santamaria, 1980; Fellner & Sulzer-Azaroff, 1984, 1985). Yet, only data on changes in accident rates permit the determination of the validity of the targeted safe job performances. Demonstrating the impact of job performance changes on accidents and injuries, however, often has been difficult, especially when relatively small subject populations have been involved. For instance, in a materials research laboratory (Sulzer-Azaroff, 1978) although risky practices had been observed, serious accidental injuries rarely happened prior to the implementation of the program, so the fact that no accidental injuries have occurred in the 11 year follow-up interim cannot be regarded as significant. Similarly the lost time accident rates in a paper mill were relatively low due to the size of the workforce (Fellner & Sulzer-Azaroff, 1984, and Sulzer-Azaroff, Fox, Moss and Davis, in preparation). The same situation occurred in the insti-
tution in which the two Alavosius and Sulzer-Azaroff (1986, in press) studies were conducted. Again, despite an absence of new back injuries during the one year follow-up, the full impact of the program remained unclear. Whether or not improved lifting and transferring of patients helped staff prevent back injuries could not be determined unambiguously due to the initial low rate of those injuries.

Replication of the program systematically in a setting containing a considerably larger workforce would permit validity, reliability and generality to be evaluated.

For every successful systematic replication demonstrates that the finding in question can be observed under conditions different from those prevailing in the original experiment . . . systematic replication can accomplish this [demonstration of generality] and, at the same time, extend its generality over a wide range of different situations. (Sidman, 1960, p. 111)

The opportunity to conduct such a systematic replication presented itself when we were approached by a large telecommunications organization and asked to propose and subsequently guide the implementation and evaluation of an accident prevention program. The purposes of the study, therefore, were twofold: (1) to assess the generality of the injury prevention model we had developed in an organization much larger than those that had served as our prior sites and (2) to measure any resultant impact on accidents and lost time injuries.

**METHOD**

**Subjects and Setting**

The study was conducted in a two story manufacturing and office complex located in suburban Chicago. Spread over the equivalent of several city blocks, the upper floor housed offices; the lower, primarily the manufacturing operation. The approximately 3,300 employees performed various jobs such as management, professional, business and service activities, manufacturing, quality
assurance, shipping and receiving, maintenance, research, and others.

Previously, many managers in the plant had been trained in Performance Management (PM), a “systematic, data oriented approach to managing people at work” (Daniels & Rosen, 1986, P. 4). (The PM model includes pinpointing and objectively measuring performance, and, following a baseline assessment, adding feedback, goal setting and reinforcement for progress.) At the time of the study, under the guidance of both an external and an internal PM consultant, the managers were participating in a variety of PM programs. Additionally, upper level managers, from the Vice President of Manufacturing to the President of the company, were working under incentive plans which included improvement in safety as an objective. In other words, the organizational environment was especially receptive to a behaviorally based approach to injury prevention.

The details of the program were planned in coordination with senior safety personnel at the plant—the Director and Associate Director of Safety—the external Performance Manager, and, to some extent with workers and middle managers. A former member of the safety department returned from his retirement to serve as the main observer and purveyor of feedback.

Once the preliminary assessment had been carried out (see below), three departments were identified as having the highest injury rates. These work units, most of whom operated on two shifts, were selected for involvement in the study: The first, Department 1, contained a workforce ranging from about 100 to 130 workers at any particular time, and produced printed circuits, including operations such as using punch presses, laminating, applying patterns to boards and plating. The second group of about 47 to 63 members, Department 2, assembled and tested the electrical components within the boards, using either automated or manual (e.g., soldering, etc.) methods. The third department included about 40 to 45 workers who partially assembled and wrapped large circuit boards. For purposes of assessment and feedback, each Department was subdivided into “sub-units” which ranged from 8 to 50 workers, with an average number of about 25. As each of these departments was supervised by a manager and each sub-unit by a supervisor for
each shift, in toto, approximately 200-250 employees were involved directly. Daily fluctuations in number of workers present depended upon orders, vacations, illnesses and so on. Over the course of the study, however, the number remained relatively stable.

In general, most workers were long-time employees, with their jobs protected by seniority, for during recent years automation had depleted the workforce of its more junior members. "Pinpoints" (i.e., target behaviors) were specified for the performance of each of the personnel involved in running the program. These are outlined on Table 1. (Following the time period described in this report, a fourth department, Maintenance was included in the program.)

**Materials**

Other than the recording sheets, the only materials used were the posted charts and some low-cost tangible rewards ranging from about $2 to $5 in price. Fortunately, the company included a sophisticated graphics department, which prepared, updated and photographed the 24" x 36" feedback charts weekly. The tangible rewards included luncheons, coffee and rolls or items such as tape measures, pens, ice scrapers and others that displayed the company and Safety Department logo. A luncheon, costing about $1,500 was given to all members of Departments 2 and 3 when both had reached and sustained safety performance levels of 100% for a few weeks.

**Systems Analysis**

The systems analysis was designed to identify pinpoints and to decide which groups of what size would be involved in what order. How often observational recording and feedback would be scheduled and who would be involved in conducting the program also needed to be planned at the outset, as generalization and long-term maintenance of the program were of major concern. Information was gathered about: the formal and informal networks of contingencies (i.e., who had line authority over whom, the role of the unions, personnel policies, the organization of job functions; compensation
Table 1. Pinpoints for each of the personnel involved in running the program.

<table>
<thead>
<tr>
<th>Supervisor</th>
<th>Manager</th>
<th>Director</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gives positive feedback to employees during weekly meetings.</td>
<td>Provides Director with weekly safety performance updates.</td>
<td>Participates in one or more departmental safety performance awards monthly.</td>
</tr>
<tr>
<td>Has department safety performance charts updated within 24 hours of receipt of prior week's rating.</td>
<td>Participates in awards program for safe performance achievement.</td>
<td>Monthly (quarterly) reinforces one supervisor selected by manager for superior performance in Safety Performance Program.</td>
</tr>
<tr>
<td>Spots opportunities for improved safety; reviews with Manager and Safety Dept.</td>
<td>Reinforces supervisors whose departments meet/exceed goal.</td>
<td>Prepares and maintains safety performance chart(s) for V.P. Operations.</td>
</tr>
<tr>
<td>Encourages employees to suggest ways to improve worker safety within their department.</td>
<td>Participates in development of pinpoints for a department entering the Safety Performance Plan.</td>
<td>Selects a department to receive the quarterly Best Safety Performance Award. (Note: To be given by officer)</td>
</tr>
<tr>
<td>Implements new/additional methods/equipment to improve safety performance in department.</td>
<td>Encourages suggestions by supervision and workers which may improve safety performance.</td>
<td>Includes safety performance as an objective in managers MBO.</td>
</tr>
<tr>
<td>Encourages/rewards individual employees for safe performance.</td>
<td>Uses position to help implement stalled safety suggestions/improvements in equipment/procedures.</td>
<td></td>
</tr>
</tbody>
</table>
systems; health and safety policies; the roles and functions of the Safety Department and so on); ongoing data systems, such as accident and lost time recording systems; details of departmental functioning, such as how the Maintenance Department received and discharged its duties; and many other details. Such information was essential if the program was to continue to thrive, not only initially but later, as a permanent practice within the regular organizational operation. Accordingly, all key procedural decisions were based on their ease of incorporation within the normal operating system: which safety targets to pursue where, when, how, and with whose assistance. For instance, weekly observation, feedback and reinforcement schedules were selected as practical and feasible and corresponded to the schedules followed with other PM programs at the plant.

**Selection of Safety Targets**

Given the size of the plant and the multiplicity of work activities, it was decided that each sub-unit would have its unique set of safety performance targets. The specific performances to be modified were selected by (1) reviewing accident and injury records, (2) interviewing safety personnel, management and workers by the consultant, and (3) conducting direct observations (Sulzer-Azaroff &
Fellner, 1984). Records were analyzed to determine in which departments the bulk of the accidents were happening, as focusing on these "hot spots" presumably would provide the greatest initial payoff. Three departments turned out to be prime candidates for initial intervention, based on the assumption that if positive results were achieved, other departments would be involved sequentially later on. Accidents then were classified according to type and probable cause, as indicated on the records. The interviews and observations resulted in the addition of other hazardous behaviors or conditions. Next, based on the expertise of the safety staff and input from workers and their supervisors, safe alternatives were specified. Table 2 lists examples of some of these items.

Table 2. Examples of worker pinpoints

- Wear eye protection when and where required
- Wear shoes with closed toe and heel
- Sort no more than one or two boards at a time
- Limit lifting to a 1 1/2" stack of boards
- Pivot instead of twisting body when carrying a load
- Bend knees and carry load close to body while lifting
- Leave carts in designated locations only
- Keep aisles clear
- Make sure containers are labeled
- Store chemicals in designated locations
- Avoid spills and clean-up wet floors
- Load carts without overhang
- Load carts behind orange/zebra striped line
- Keep boards on carts below the six foot level
- Avoid stacking small boards below or behind large ones
Observational Recording

The observational recording system resembled the one applied in previous studies (e.g., Fellner & Sulzer-Azaroff, 1984). Safe performances were defined carefully as operations to be scored according to the number of people adhering and not adhering to the proper procedure. Infrequent performances, such as lifting or carrying completed stacks of boards were scored whenever they were seen to occur, while repetitive movements, such as the operation of staple guns, were watched and counted for several sequences in a row. For conditions (i.e., the results of behaviors, such as clear aisles), each sub-unit’s work area was divided into a set of zones. Safe conditions were scored for the number of such instances and their locations indicated on a schematic map of the work area. Any zone in which no such instances were found was scored as ‘safe.’ Other safety issues were added as notes. Figure 1 displays a sample observational form.

Before the observational forms were finalized, they were tested informally for reliability of assessment and refined until observers’ recordings closely agreed. Subsequently, always beginning at different points within the department, occasionally joined by a second observer, the main observer toured each of the three departments once a week, spending approximately 10 to 15 minutes in each sub-area. First he would watch workers performing their jobs; then record conditions. As observers became sophisticated, they were able to record behaviors from a distance. They reported that their increasing familiarity with people and their jobs permitted them to detect subtleties, such as particular movements, and to record more efficiently. When a second observer independently recorded the performances and conditions, he later compared his results with those of the primary observer to assure that quality of the assessment remained high. Formal assessments of reliability, however, were not conducted. (During observations, occasionally the recorder would positively and constructively counsel or coach a worker or supervisor on a particular safety performance or method of delivering feedback.)
FIGURE 1. Sample Observation Form

PM MONITORING AND EVALUATION RECORD

<table>
<thead>
<tr>
<th>DEPARTMENT</th>
<th>SUPERVISOR</th>
<th>DATE</th>
<th>TIME</th>
<th>OBSERVER</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>BEHAVIOR</th>
<th>Number Using</th>
<th>Sub Total</th>
<th>Number Not Using</th>
<th>Sub Total</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carry close to body: pivot, no twist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slide Back Plane 1/3 out of cart</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lift and carry close to body</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 people lifting/carrying loaded tray</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Glasses at GD Machines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoes and Closed Toe &amp; Heel No Canvas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## CONDITIONS

<table>
<thead>
<tr>
<th>Area</th>
<th>Subtotal Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOM</td>
<td>Loaded trays hanging over cart into aisle area</td>
</tr>
<tr>
<td>DO</td>
<td>Doors to hydraulic unit closed</td>
</tr>
<tr>
<td>AG</td>
<td>Nozzles in place on air guns</td>
</tr>
<tr>
<td>SL</td>
<td>No oil/liquids in walking areas</td>
</tr>
</tbody>
</table>

### Handling

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBP</td>
<td>Loaded back planes trays 12 high maximum</td>
</tr>
<tr>
<td>TS</td>
<td>Trays MT or full on top of cart</td>
</tr>
<tr>
<td>WF</td>
<td>Wiring fixtures in racks</td>
</tr>
<tr>
<td>NC</td>
<td>NC tapes filed in cabinets</td>
</tr>
</tbody>
</table>

### TOTAL INCIDENTS

- **01 Zones Safe**
- **01 Zones Not Safe**
- **% of Zones Safe**

## DEPARTMENT LAYOUT

![Department Layout Diagram]

### NOTES:

1. [Note 1]
2. [Note 2]
3. [Note 3]
Accident Data

As required by policy and regulation, records were kept for all Office of Safety and Health Administration (OSHA) "recordables" and lost time injuries. OSHA recordables were defined as: "any injury referred for medical treatment beyond first aid." Lost time injuries were defined as: "any injury leading to at least one day off the job." These were categorized by department, to enable rates to be contrasted for the periods prior to and during the safety intervention.

Cost/Benefit Analyses

Estimates were calculated for the compensation and medical costs for an average lost time accident, and for the start-up and daily operation of the program. The time required for the observer, initial safety information given to employees, ongoing on-the-job training of supervisors and other piecemeal coaching and counseling also were included.

Baseline Assessment

A single score, "percentage of safety achievements," was determined for each sub-unit of each of the three departments by combining the percentages of behaviors members performed correctly and the percentages of zones scored "safe." These percentages were plotted and displayed within the unit, as described below, and also aggregated for the whole department to constitute the weekly performance score. Baseline assessment for Department 1 began early in April 1988 and continued for seven weeks, until the intervention during the second week of June. Performance by the other two departments was assessed from the first week of May until mid-June (see Figures 2, 3 and 4).

Performance Management Intervention

Charts were posted listing recommended safe practices for the unit, such as those listed on Table 2, and in a "kickoff" meeting employees were told how to perform safely. The management intervention involved a combination of feedback, reinforcement and
FIGURE 2. Safety Performance Achievements for Department 1. Note: The horizontal goal lines are drawn directly onto the graph. The number of OSHA recordables and lost time accidents from January to June and from July to December 1988 are shown below the graph.
FIGURE 3. Safety Performance Achievements for Department 2. Note: The horizontal goal lines are drawn directly onto the graph. The number of OSHA recordables and lost time accidents from January to June and from July to December 1988 are shown below the graph.
FIGURE 4. Safety Performance Achievements for Department 3. Note: The horizontal goal lines are drawn directly onto the graph. The number of OSHA recordables and lost time accidents from January to June and from July to December 1988 are shown below the graph.
goal setting, according to the Aubrey Daniels and Associates (Daniels & Rosen, 1982) and Fellner and Sulzer-Azaroff (1985) models. Specifically, each week, after data had been collected, the information was fed back to the departmental managers, who, in turn, conveyed them to unit supervisors. The new weekly data point was added to the graph, which was copied and sent, along with a copy of the recording forms and a cover message from the Director of Safety to each departmental manager. Each unit was given a team name, such as (supervisor’s name) Gangbusters or (supervisor’s name) Piranhas. The message from the safety manager summarized the teams’ accomplishments, mentioned suggested improvements, including items not specifically pinpointed and added congratulatory or encouraging statements to each as merited: For example: “Wow! 97%, a first! (supervisor’s name) Commandos have been above goal for 5 straight weeks.” or “/ had a slight downturn after 5 straight weeks above goal. They will come back strong.” These specific messages were followed by a general statement for each department, an indication of what celebrations were in order and any suggestions for improvement or maintenance of progress, such as “Please continue to have the charts posted.”

After supervisors of the unit received the feedback, they held a brief (about five minute) meeting with workers in their respective units. The supervisor gathered the workers before the chart and pointed out and praised where progress had been made. Supervisors were trained in this procedure by having it modeled by the manager of the department, and/or one of the safety staff, and by being given a set of written instructions and informal feedback. Specifically, supervisors were asked to keep feedback positive and to make a “big deal” of improvements. (Instances of imminent danger were to be handled individually, any time they happened to be observed but not in the group meeting.) In weekly feedback meetings, goal attainment was enthusiastically praised and frequently cheered by members.

Based on prior performance, subgoals were set for the following period of 4-5 weeks, indicated on the graphs with a horizontal line and communicated to workers. In general, subgoal levels were determined by looking at percentages scored during the previous several weeks and selecting a percentage point towards the upper end
of the recent distribution. The subgoal was to be sustained for 4-5 weeks, until performance either stabilized at or exceeded that level.

The initial extrinsic reinforcement was delivered following the accomplishment of the first major goal during a group meeting. During this meeting, graphic evidence of progress was highlighted and supervisors offered their congratulations occasionally and distributed the low-cost rewards to all members of the team. Additionally, about monthly, when departments made a significant achievement, special rewards were distributed, such as refreshments, or the tangible items mentioned above. Whenever a unit met the ultimate goal of 100%, this was followed by a major celebration, such as a luncheon at company expense, a visit and/or award from the Director of Manufacturing, Vice President of Manufacturing, or Director of Safety, or a ceremony plus a group photograph.

**Experimental Control**

By setting goals at different levels and assessing change in relation to these levels, the method of goal setting incorporated a "changing criterion design." According to Hall (1971):

> In using the changing criterion design, the experimenter successively changes the criterion for consequation, usually in graduated steps, from baseline levels to a desired terminal level. If the behavior changes successively at or close to the set criterion levels, experimental control can be demonstrated. (p. 24)

Additionally, implementation of the interventions was staggered across two of the baselines: during week 9 for Department 1 and during week 11 for Departments 2 and 3. This arrangement partially fulfilled the requirements for a multiple baseline design.

**RESULTS**

**Safety Performance**

As can be seen in Figures 2, 3, and 4, the reported performance of participants within each of the departments began to progress
steadily over the approximately six months during which the Performance Management package was in effect. Generally, following the first few weeks, scores matched or exceeded the goal levels set during the weekly meetings. By the end of the year, Department 1 had reached safety scores above 90%, Department 2, 100% and Department 3, 99%.

**Accident Rates**

Displayed on the same figures are the two categories of accidents recorded for the six month period prior to and the six months during the intervention: OSHA recordables and lost time accidents. Totals for the three departments are displayed in Table 3. Nineteen eighty-eight was the best safety year ever plant wide in terms of number and rate of injuries, per man hours worked. Follow-up inquiries revealed that January through March of 1989 was the best quarter ever achieved in the plant.

**Cost/Benefit Assessment**

The programmatic costs were estimated on the basis of two sets of figures—those for start-up and those for steady state operation. The start-up figure of $20,000 included consulting expenses, extra staff time for designing the structure and technical details of the program and other one-time expenditures. Running the program was estimated to be about $35,000 on an annualized basis. This figure included staff time, reinforcers and other materials.

<table>
<thead>
<tr>
<th></th>
<th>OSHA RECORDABLES</th>
<th>LOST TIME ACCIDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. to June</td>
<td>47</td>
<td>14</td>
</tr>
<tr>
<td>(prior to intervention)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July to Dec.</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>(during intervention)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The figures for benefits were based on the estimated average of $17,000 for compensation costs per lost time injury. These figures do not include less apparent savings such as avoidance of additional training time for replacements, loss of production by the injured person or by fellow workers attending to injured employees, time spent by health care personnel and other costs such as pain and suffering, associated with on-the-job injuries.

Were one conservatively to calculate the amount saved, by halving the difference in number of lost time injuries from the initial to the latter six months of the year, \((13/2 = 6.5)\) and multiplying by the $17,000 figure, the result would be $110,500. Subtracting the cost of the program, including start-up expenditures, for the entire year would yield a net savings of $55,500.

**DISCUSSION AND CONCLUSIONS**

The two key questions regarding the validity and the generality of the model were largely answered. The PM safety improvement model was applicable to a large industrial organization (at least one in which PM was incorporated within the organizational culture), and accident rates diminished. A few alterations were made in adapting the program to a plant of this size: The intervention was implemented initially among only three of the total of approximately 35 departments, although additional departments subsequently were involved sequentially. Large departments were subdivided into smaller work units and targets tailored to each. Rather than having measures collected by a researcher, data on safety performance were recorded by a member of the organization, and reliability of recording was not formally assessed. (The reductions in injuries paired with recorded increases in safe performance should serve as sufficient evidence of the validity of the observational measures.)

The decrease in accident rates was substantial, with lost time injuries dropping to nearly zero in the three departments in which the program was implemented. In fact, as mentioned, the plant produced its best safety record for the year. Enthusiasm for the program pervaded the company, with the President at corporate head-
quarters disseminating details of the methods throughout the company.

Presumably the systems analysis conducted at the outset was beneficial, because the improvement was so powerful. By determining where the major safety "hot spots" were located and intervening there first, major improvement was accomplished rapidly. Also the assessment of the network of contingencies probably supported the efficiency and effectiveness with which the program operated. The analysis also helped safety personnel to view their potential roles and functions differently, enabling them to involve themselves as managers of ongoing performance.

Costs clearly were outweighed by benefits. Not only were the net savings for the year substantial but, assuming the program is sustained, they should prove even greater in years to come. Recognize that the PM safety program was only in effect for half the year and that start-up costs such as external consultation, "kick off" meetings, observer training and others were one-time expenditures. Less obvious savings such as those listed earlier and in worker and managerial morale, work efficiency and productivity also should begin to accrue to the benefit of the company and its employees as well.

Informal impressions suggested that a tremendous enthusiasm for the program pervaded all levels of people involved. The Safety Department commented that "the program was fantastic. I never dreamed people would be so successful. The program provided the missing link in our methods (i.e., feedback and reinforcement). My way of thinking has changed." "The excitement levels ran the entire length of the company."

Workers comments were reported to be overwhelmingly positive. They often inquired about their safety performance prior to formal posting and asked what they could do to improve it.

In interpreting the impact of the program, the Safety Director opined that the chemistry and timing were just right. They "were looking for a positive behavioral approach, with a focus on positive performance—safety, rather than on the negative, accidents."

The ultimate assessment of the value of the PM program will depend upon its long-term impact. To date, the implementation of the model is sustaining and being applied more widely in this plant.
Whether or not it is adopted elsewhere within or outside of the company remains to be seen. In the interim, the PM model of safety described in this report appears to hold great promise as a strategy for preventing lost time injuries on the job.

REFERENCES


