

The Turnaround at the Kenora Pulp &

By J.M. STEWART

A dramatic turnaround in safety performance was initiated at the Kenora, Ontario pulp and paper mill using a unique questionnaire survey completed by a broad cross-section of mill employees. Based on a model of safety management used by the world's safest companies, the survey produced quantitative data on the state of safety management and on the effectiveness of safety practices, including measurements of seeming intangibles such as management commitment.

The mill effected a complete turnaround in safety. Before the intervention in 1994, the mill had an average of seven lost-work injuries per year. In the following five years (1995 to 1999), it had no lost-work injuries and total injuries were reduced by 75 percent.

Following the turnaround, a repeat survey confirmed that changes in performance correlated well with the major changes seen in the new survey data. Later, results were compared to benchmark data for the same questionnaire obtained through research at five very safe companies and five companies with very poor safety performance.

It was an upset president of Rainy River Forest Products who called that October morning in 1994. In the previous few months, two people had been killed in separate accidents at the firm's Kenora, Ontario pulp and paper mill. He wanted to know "where they had gone off the rails."

Rainy River was a newly formed company, put together that year from the Canadian and some U.S. assets of Boise-Cascade. Its two mills in north-western Ontario (Kenora and Fort Frances) had been in operation since the early 1900s but were up-to-date and efficient. Both had better-than-average safety records, typical of Boise-Cascade. Pulp & Paper Canada called the Fort Frances mill "the safest large mill in Canada." The Kenora mill's safety

performance had been good but not outstanding (Table 1).

I agreed to take the assignment, not to

investigate the fatalities, but to assess the state of safety at the mill. The president was under pressure to get answers for a board meeting in December, just a few weeks away.

This article reviews the investigation and describes the use of a unique technique to lay the foundation for a turnaround in safety at the mill.

THE SITUATION AT THE KENORA MILL

My first visit to the mill was not a comfortable one. Rainy River was the main employer in the small, remote community. Everyone in the mill knew the two men who had been killed. Mill management had not asked for help from a consultant. The workforce was upset and everyone had a different theory about the cause of the safety problems.

The first steps were to gather data on the mill's safety record; assess its safety practices; interview senior managers; tour the mill; and talk to shopfloor employees—the "normal" consultant's routine.

The safety statistics did not provide

TABLE 1 The Safety Record of the Kenora Mill*

	1990	1991	1992	1993	1994	Avg. 1990-94
Kenora Mill						
LW Injuries (Number)	12	7	4	7	7	7
LWIF	1.77	1.04	0.61	1.04	1.03	1.1
TRIF	12	8.6	7.9	5.1	5.3	7.8
Large mills, Avg.						
LWIF, Avg.	4.1	4.2	2.7	2.2	2.0	3.0
TRIF, Avg.	16	16	13	12	11	13.6

LWIF is the frequency of lost work injuries and TRIF the frequency of total injuries, including lost work, restricted work and medical treatment cases per 200,000 hours.

*The LWIF data for Canadian mills is from the annual records published by Pulp & Paper Canada, Southam Magazine and Information Group, Toronto. TRIF data for Ontario mills are reported by the Ontario safety association for the sector.

in Safety

Paper Mill

convincing evidence that safety had “gone off the rails.” The frequency of total injuries had not changed much from previous years. A fatality is so tragic that many find it hard to accept that the incident should be given the same weight as other injuries in assessing the state of safety. But the safest companies downplay injury severity on the basis that it is the incident that must be prevented. Minor injuries and even incidents without injury can result in serious or even fatal consequences. While the Kenora mill had not matched the sterling performance of its sister mill at Fort Frances, it had been better than most of

the mills tracked by *Pulp & Paper Canada*. Discounting the severity of its recent experience, the Kenora safety performance had not changed.

Most senior managers had concluded that bad worker attitude was the primary problem (and how can you change worker attitude?). The mill manager was committed to resolving the immediate issue and was dedicated to safety excellence.

An undercurrent of disunity was apparent among the senior managers. In the face of the current crisis, they blamed workers and to an extent, each other. Workers were equally reactive. The long-service workforce seemed competent,

responsible and serious about safety, yet most workers blamed management entirely for the safety problems.

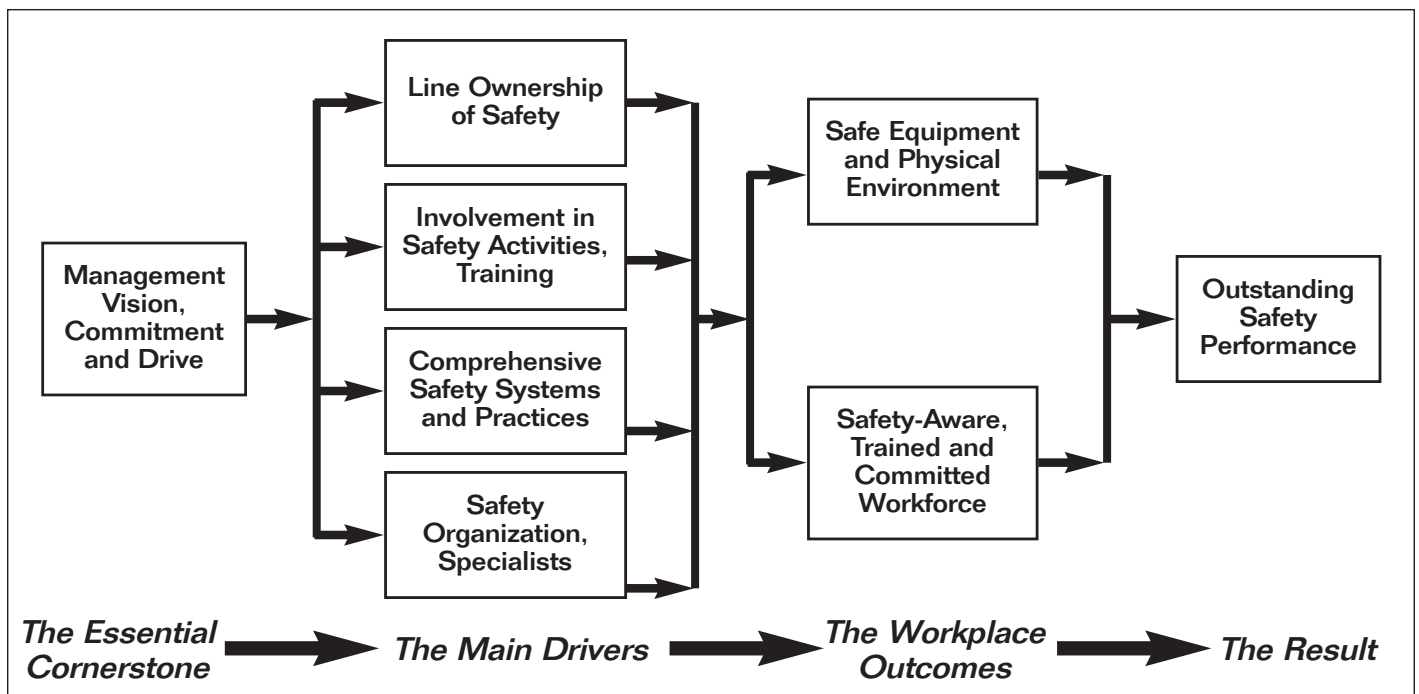
The mill’s Joint Health and Safety Committee (JHSC), made up of management and union members, was active and there was cooperation among the members. The safety advisors seemed competent. Neither group had identified the root causes of the mediocre safety performance or formulated a plan to address the problem.

The mill’s safety practices seemed fairly comprehensive and up-to-date, and on the surface seemed to be operating fairly well. The equipment seemed in good condition as well.

Two major assessments of the mill’s safety practices had been conducted in the previous two years, one by an international consulting company and one by representatives from the Fort Frances mill. Although both of these audits suggested improvements, neither of them identified major issues nor proposed fundamental changes.

Thus, no easy answers were evident. Telltale signs indicated that all was not well, however. The disunity among managers and the pervasive view among all parties that someone else was at fault were disturbing signs. Lack of a coherent management drive for excellence was

FIGURE 1



Sample Size

Sample size was restricted by the practical considerations of working on a consulting project in an operating mill. Larger samples would have been preferable, and in later consulting and in research, the sample size was enlarged.

However, statistical analyses showed that the number of people polled was sufficient to support valid conclusions. For example, Table 16 (pg. 43) reports perceptions of both survey groups regarding safety rules. Since all managers were surveyed both times, one can be confident that an accurate assessment of their views was obtained. In 1994, 27 percent of managers gave a positive answer; in 1996 it was 100 percent.

A significant proportion of supervisors were surveyed (38 percent in the first survey and 24 percent in the second), but the result is less certain than for the managers. The proportion of workers surveyed was necessarily smaller—14 of 550 in the first survey and 24 in the second. Thus, the major improvement found—from 24 percent to 80 percent—has less statistical validity. Nevertheless, the 95 percent confidence interval (+/- 0.23) for the difference of 0.69 between the 1994 and 1996 results makes it clear that an important difference did exist.

evident as well in housekeeping and employee attitudes.

The central safety committee, made up of mill managers but chaired by the safety supervisor was observed. Some managers were not present and people were constantly coming and going throughout the low-energy meeting. It was clear that the problem was not worker attitude alone.

FORMULATING AN APPROACH TO ASSESSING THE ISSUES

Figure 1 presents a "model of managing for excellence in safety" constructed from observation of how some of the safest companies operate. The model stresses the critical importance of "soft" management factors.

The Kenora situation related directly to this model. Injuries resulted from unsafe acts, so worker attitude was a direct cause, as management maintained. However, without management commitment and strong "ownership" of safety by line managers, worker attitude would not likely be good. The main deficiencies seemed to be in these factors—in the "essential cornerstone" and the "main drivers" of excellence in safety. Without reform in these areas, improved safety performance would be doubtful.

It is difficult for management to see that the problem may lie at its own doorstep. The tendency is to look at the concrete elements of safety—physical aspects of the workplace, systems and practices, the safety organization and the safety specialists. Yet none of these seemed to have obvious faults.

The mill had a heritage of good safety. And it was not as if the mill had a really bad record. Thus, while the preliminary investigation pointed to management issues, it was apparent that the normal observational approach would not convince skeptical managers. It would be difficult to convince them that something as intangible as "management commitment" was the problem. So, an approach

that would generate more-persuasive evidence was needed.

While the model helps in the understanding of safety, none of its factors can be measured directly. However, underpinning the model are the beliefs and practices that are common to the safest companies. These beliefs and practices were used to construct the survey. (See sidebar, pg. 39.)

Perception surveys have been used frequently in non-safety applications. Mahler pioneered their application to managerial behavior, using them as a core tool in his Advanced Management Skills Program (Mahler Co. Inc.). His techniques were an important base for the development of the questionnaire used here.

Questionnaire techniques have been used less frequently in safety management studies (e.g., Peterson; Krause; Hurst, et al). However, the author knew of no comprehensive questionnaire based on a structured model of safety management that would yield quantitative results. The questionnaire developed assessed the following elements:

- 1) Priority individuals give to safety.
- 2) Perception individuals have of the priority others give to safety.
- 3) Extent that people believe "all injuries can be prevented."
- 4) Involvement of mill employees in "doing things in safety."
- 5) Extent to which safety rules are obeyed.
- 6) Perception of the safety of physical facilities.
- 7) Perception of the quality of the safety organization.
- 8) Satisfaction with the mill's safety performance.

The questionnaire was designed to be quantitative, objective, comparative and anonymous. It would be completed by a broad cross-section of the workforce. [Note: At the time of this consulting project,

the author had just begun a research project on safety management. The model and questionnaire were further developed through the research and through later consulting projects. A discussion of the model and of the questionnaire is given in Stewart 1999 and 2001.]

The mill manager agreed with this approach and his staff helped to implement it. During the next visit, six focus groups were held, one each with senior managers, superintendents and supervisors, and three with separate groups of workers. Participants were encouraged to discuss the mill's safety and what should be done to improve it.

At the end of each meeting, the questionnaire was explained and each participant was asked to complete it on the spot. The survey included 42 of the mill's 700 employees—the mill manager, the 10 senior managers, 17 superintendents and supervisors (who were grouped under "supervisors" in the results) and 14 workers. (See sidebar on sample size.) Thus, the survey included all the senior managers, about one-third of the supervisors/superintendents and a smaller proportion of workers. Supervisors, superintendents and workers were chosen at random with the assistance of the mill safety officer.

SURVEY RESULTS

The questionnaire proved to be a powerful tool in helping define the causes of the problem and in convincing the leaders of them. Results were amplified by observations in the mill, from discussions with individuals and from information obtained through the focus groups.

Question 1: Priority Individuals Give to Safety

The belief: "The health and safety of people has first priority and must take precedence over the attainment of business objectives."

The rights to the commercial use of the copyrighted elements of the Safety Survey, including the safety questionnaire, and rights to the commercial use for safety projects of the copyrighted elements of the Future Safe Visioning Process have been acquired by the Safety Resources Business of E.I. DuPont de Nemours and Co.

TABLE 3 The Priority People Think Others Give to Safety

Responding Group	% Who Thought Others Rank Safety First			
	Managers	Supervisors	Workers	Avg.
Managers	64	63	27	51
Supervisors	18	44	8	25
Workers	30	37	55	41
All	34	47	29	36

The priority that an organization gives to safety is perhaps the most-important determinant of performance. It relates directly to the most-important factor in the model—management commitment. Giving safety overriding priority has profound implications—it influences all aspects of safety. There is long experience behind this specific wording. This commitment must be visible in all actions of the company, particularly in management’s behavior. Unless such priority is given to safety, it will drift to a lower value in the face of pressure for volume, quality, costs and other performance needs.

Employees must believe that the company places the highest value on their safety—higher even than on monetary factors. If it is perceived to compromise safety, cynicism will quickly develop. Management that doesn’t give priority to safety sends an unmistakable signal. Employees soon realize that their safety is given lower value and act accordingly.

The question posed did not deal directly with commitment to safety. Rather, individuals were asked to rank their personal priority among quality, costs, production volume and safety. In a manufacturing plant or mill, quality, costs and production volume are the leading business drivers and are often put ahead of safety.

1) Indicate the priority you personally give to the following items. Rank in order from 1 to 4, with the item you think is most important marked 1, the least important marked 4. Do not rank any factors equally.

Results, summarized in Table 2, were disturbing. (In all the tables, the numbers are the percentages of respondents who gave a particular answer.) Clearly, individuals were not giving high priority to safety. How could safety excellence be achieved with 80 percent of workers giving higher priority to costs, quality or volume? Comments written on the questionnaire and made in the focus groups and interviews supported the low priority given to safety.

TABLE 2 The Priority Individuals Give to Safety

Responding Group	% Who Ranked Safety First
Managers	55
Supervisors	69
Workers	21
All	49

Question 2:

Priority Others Give to Safety

This question is based on the same belief that safety has top priority. In Question 1, respondents reported the priority they as individuals give to safety. Much more important is their view of the priority others—particularly management—give to safety.

2) Indicate where you think others in your organization rank the same items. For example, give your opinion of the priority that you think supervision as a group gives to the item. Rank in order of priority from 1 to 4 as in question 1.

Sixty-four percent of the managers said that managers as a group gave safety first priority, but only 27 percent of them thought workers ranked safety first (Table 3). Supervisors did not think that either management or workers gave much priority to safety, although they ranked their own group higher. Workers gave managers and supervisors low marks.

Only 36 percent of all respondents thought that people in general gave first priority to safety. Not only were these results low, but they revealed a real split in opinion. Managers had a low opinion of worker priority and vice-versa. No one gave anyone else much credit for valuing safety. No wonder safety was mediocre.

The safest companies believe that workers’ perception of management’s commitment to safety is one of the strongest predictors of performance. These answers offer a clear indication of management commitment.

Question 3:

The Belief That All Injuries Can Be Prevented

The belief: “All injuries and occupational illnesses can be prevented. Safety can be managed and self-managed.”

If all injuries can be prevented, then leaders must ensure that they are. However, many leaders and workers do not believe that all injuries can be prevented and the exceptions emerge in discussion. For example, “How can you prevent injuries from an earthquake?” “What about the driver who runs a red light and crashes into you?”

Certainly, one can cite situations where injury avoidance is difficult. But in a practical sense, the safest companies (those with LWIFs well below 0.1) have proved

TABLE 4 Belief That Injuries Are Preventable

Responding Group	% Who Believe That All Injuries Can Be Prevented
Managers	45
Supervisors	41
Workers	14
All	34

the adage by eliminating more than 95 percent of potential injuries (compared to companies with average injury frequency). They also say that the few injuries they do have could have been prevented.

The difference between all injuries being preventable and almost all is critical. An injury can be explained: “What can we do about a worker who didn’t pay attention and was injured? That couldn’t be prevented, an accident for which I as the supervisor can’t take responsibility.” If the guiding principle is that all injuries can be prevented, the supervisor cannot solely fault the careless worker. The worker is responsible, but so is the supervisor, who must ensure that safety awareness is developed and that all preventive actions are taken. So are managers and the president, who are responsible for creating an environment in which people are not injured.

The extent to which this belief was held was assessed in Question 3.

3) To what extent can injuries be prevented? Check the answer that represents your personal belief.

- All can be prevented.
- Almost all can be prevented.
- Many can be prevented.
- Some can be prevented.
- Few can be prevented.

Only about one-third of the mill population and a small minority of workers believed that all injuries could be prevented (Table 4). Thus, they saw their fate as inevitable—that even tragic fatalities such as the recent two were not preventable.

Question 4:

Involvement in Safety Activities

The belief: “Involvement of everyone in ‘doing things’ in safety is the most powerful way to embed safety values and build safety awareness.”

TABLE 5 Involvement in Safety Activities

Responding Group	% Who Said That They Had Been Involved:		
	Deeply or Quite	Moderately	Not Much or Not at All
Managers	27	46	27
Supervisors	24	58	18
Workers	14	28	64
All	21	42	35

TABLE 6 Observance of Safety Rules

Responding Group	% Who Said That People Obey the Safety Rules:			
	Without Exception	Generally	Sometimes, Sometimes Not	Often Not, Little Attention
Managers	0	27	73	0
Supervisors	0	29	59	12
Workers	0	14	71	14
All	0	24	67	10

TABLE 7 Rating Facility & Equipment Safety

Responding Group	% Who Said That Facilities and Equipment Were:		
	Excellent or Good	Satisfactory	Poor or Very Poor
Managers	55	45	0
Supervisors	65	24	12
Workers	43	43	14
All	55	35	10

Involvement is a powerful way to develop safety awareness, yet few companies take full advantage of it. Common sense might say that the best way to accomplish a task is to assign it to skilled people with special knowledge—safety specialists in this case. An efficient way, yes, but not the most effective one.

In very safe workplaces, everyone is involved in “doing things in safety,” at the same time building understanding of safety and commitment to safety values. Committees and task forces with rotating membership perform most of the safety work. Workers gain understanding of the practices, feel a sense of ownership and influence their peers to be safety-aware. This is not unique to safety; it is the essence of self-management. Based on the author’s research, legislated JHSCs, often cited as vehicles for participation, provide much less involvement.

Involvement and empowerment go hand in hand. Through involvement and training, employees gain knowledge and skill. They can then be empowered to self-manage many aspects of safety, both as individuals and as teams. Question 4 asked directly about involvement.

4) How actively have you been involved in safety activities in the last year? Involvement means not

just attending meetings but doing things in safety such as being on a committee, participating in an investigation or helping put together safety rules. Check only one answer.

- Deeply involved.**
- Quite involved.**
- Moderately involved.**
- Not much involved.**
- Not involved at all.**

As Table 5 shows, the level of involvement was relatively low. Most workers (57 percent of 64 percent) said that they were not involved at all. In the face of management’s contention that the problem was worker attitudes, the mill was not taking advantage of this powerful way to build value for safety.

Question 5:

The Extent to Which Safety Rules Are Obeyed

The belief: “Comprehensive, up-to-date safety rules, crafted with broad participation and consistently applied, are essential for excellence in safety and also assist in doing the job well.”

Ideally, safety rules are constructed with full participation, regularly updated and thoroughly communicated. Workers respect them because they have participated in setting the rules. The rules are reinforced by disciplinary action, geared

to the infraction and the specific circumstances. The safest companies approach this standard.

Rules should be separated from practices. Rules are the way tasks must be performed, every time (e.g., lockout/tagout rules). They should be kept to a minimum—to those that must be followed. By comparison, practices describe the recommended way to perform tasks. “It is good practice to check the condition of your tools before you begin work.” With this separation, safety rules can be rigorously enforced.

5) To what extent are the safety rules of your organization obeyed? Check one answer.

All safety rules are obeyed without exception.

People generally obey the safety rules.

The safety rules are guidelines, sometimes followed, sometimes not.

The safety rules are often not obeyed.

People pay little attention to the safety rules.

The phrase “without exception” was intentional; it is the goal of the safest companies. The reaction is usually: “Be reasonable. Allow some room for exceptions.” Yet who wants to give drivers passing their children’s school the option of ignoring the stoplight because it was after regular hours or for whatever reason?

In the Kenora mill, not one respondent said that the rules were followed without exception. Only 14 percent of workers said that rules were generally followed (Table 6). This disturbing result supported the observation that important rules were sometimes disregarded.

Question 6:

Rating of Facilities & Equipment Safety

The belief: “The containment of hazards by integrating leading edge safety technology into the design and operation of facilities is essential for outstanding safety.”

The model of managing for safety excellence stresses that good safety performance is built on the concepts of management commitment, line ownership and individual safety awareness, developed largely through involvement. This does not mean that utilizing the best safety technology and equipment is not important. Rather, it is the inevitable outcome of the strength of the concepts. Question 6 addressed this element of safety.

6. How do you rate the safety of the physical facilities in your workplace (machinery, equipment, etc.)? Check the one answer that describes your assessment.

- Excellent.**
- Good.**
- Satisfactory.**
- Poor.**
- Very poor.**

Respondents generally agreed that facilities were not the main problem. Almost all considered the safety of the mill’s equipment and facilities to be at least satisfactory (Table 7).

Beliefs & Practices for Excellence in Safety on Which the Model & the Questionnaire Are Based

The Five Fundamental General Beliefs

- 1) The health and safety of people has first priority and must take precedence over the attainment of business objectives.
- 2) All injuries and occupational illnesses can be prevented. Safety can be managed and self-managed.
- 3) Excellence in safety is compatible with excellence in other business parameters such as quality, productivity and profitability; they are mutually supportive. Safe, healthy employees have a positive impact on all operations. They have a positive effect on customers and enhance credibility in the marketplace and in the community.
- 4) Like quality, safety must be made an integral part of every job. "Do it right the first time."
- 5) Good safety is "mainly in the head." Most injuries and incidents occur because of inattention, not because of lack of knowledge nor for physical reasons. People take risks because they believe that they will not be hurt.

The Five Fundamental Beliefs About Safety Management

- 6) Top management must be committed to excellence and drive the agenda by establishing a vision, values and goals; by ensuring that line managers have safety improvement objectives; by auditing performance; and by visible personal involvement.
- 7) Safety is a line responsibility. Each executive, manager and supervisor is responsible for and accountable for preventing all injuries within his/her jurisdiction, each individual for his/her own safety, and in a less direct sense, for the safety of coworkers.
- 8) Involvement of everyone in "doing things" in safety is the most powerful way to embed safety values and build safety awareness.
- 9) Safety training is an essential element in developing excellence. It complements but cannot replace "learning by doing" (in itself a method of training).
- 10) An organization committed to safety excellence will have a broad array of safety systems and practices, thoroughly and conscientiously implemented with broad workforce participation.

15 Specific Safety Practices & the Beliefs That Underlie Them

- 1) **Safety Meetings.** Regular, effective safety meetings, involving all employees, are an essential part of good safety.
- 2) **Safety Rules.** Comprehensive, up-to-date safety rules, crafted with broad participation and consistently applied, are essential for excellence in safety and also assist in doing the job well.
- 3) **Enforcement of Safety Rules.** Disciplinary action for safety infractions is an essential part of good safety. Its intent is not punishment nor retribution, but the correction of unsafe behavior, the demonstration of the standards of an organization and the weeding out of those who will not accept their responsibility for safety.
- 4) **Injury and Incident Investigation.** Every injury and incident is an opportunity to learn and improve. Thorough processes of investigation are a cornerstone of safety.
- 5) **Workplace Audits/Inspections.** Auditing the workplace to assess physical conditions, for the effectiveness of safety systems and for the awareness of the people who work there is a valuable way to improve safety.
- 6) **Modified Duty and Return-to-Work Systems.** Excellence in safety is enhanced by thorough efforts to find modified duties for injured people who cannot perform their regular jobs but who can safely do other work; and by comprehensive initiatives to assist in rehabilitation and ensure early return to work.
- 7) **Off-the-Job Safety.** The organization has a responsibility to promote "off-the-job" safety as well as safety in the workplace to help make safety "a way of life."
- 8) **Recognition for Safety Performance.** Recognition for safety achievement and celebration of safety mile-

stones provide strong reinforcement for the organization's commitment to excellence.

- 9) **Safety of Facilities and Equipment.** The containment of hazards by integrating leading edge safety technology into the design and operation of facilities is essential for outstanding safety.

- 10) **Measuring and Benchmarking Safety Performance.** Comprehensive, up-to-date safety statistics, communicated to all, are a cornerstone of safety management. Benchmarking against the best will help improve safety.

- 11) **Hiring for Safety Attitude.** Safety can be enhanced by hiring people with good safety values and attitudes.

- 12) **Safety of Contractors and Subsidiaries.** Contractors and subsidiaries, including foreign operations, must all work to the same safety standards as the company.

- 13) **Involvement in Community and Customer Safety.** Excellence in safety will lead naturally to involvement and leadership in community and customer safety. This will be valuable to the organization, the community and customers.

- 14) **The Safety Organization.** The safety organization is a valuable asset in attaining excellence in safety. It should be chaired by the leader and led by the line organization, with broad participation by the entire workforce, particularly those at the working level.

- 15) **Safety Specialists.** Safety specialists can provide a valuable assist to the safety organization. They must avoid taking responsibility for managing safety or accountability for results; these lie with the line organization. Rather than performing the work themselves, they should facilitate involvement of the workforce.

Involvement is a powerful way to develop safety awareness, yet few companies take full advantage of it.

TABLE 8 Rating of the Safety Organization

Responding Group	% Who Rated the Safety Organization:			
	Excellent	Good	Satisfactory	Poor or Very Poor
Managers	0	27	64	9
Supervisors	6	25	38	31
Workers	0	29	43	28
All	2	27	46	25

TABLE 9 Satisfaction with the Organization's Safety Performance

Responding Group	% Who Said That They Were:		
	Moderately or Very Satisfied	Neither Satisfied nor Dissatisfied	Moderately or Very Dissatisfied
Managers	27	9	64
Supervisors	41	35	24
Workers	28	36	36
All	33	29	38

TABLE 10 Ranking the Most Important Priorities for Change

Responding Group	% Who Ranked the Given Item as First Priority			
	Management Commitment & Drive	Plant Equipment	Safety Organization	Training & Attitudes of Workers
Managers	64	9	0	27
Supervisors	53	0	0	47
Workers	61	8	8	23
All	59	5	2	34

Question 7:

The Quality of the Safety Organization

The belief: "The safety organization is a valuable asset in attaining excellence in safety. It should be chaired by the leader and led by the line organization, with broad participation by all of the workforce, particularly those at the working level."

The safety organization includes the management safety committee, the committees that monitor and improve systems (e.g., a rules and procedures committee) and task forces or teams set up for specific purposes.

7) How do you rate the effectiveness of the safety organization in your workplace (the managers' safety committee, the JHSC, other safety committees, the safety systems, structures and procedures)? Check only one answer.

- Excellent.
- Good.
- Satisfactory.
- Poor.
- Very poor.

Most of the respondents rated the safety organization as satisfactory or better (Table 8).

Question 8: Satisfaction with the Mill's Safety Performance

Question 8 probed the satisfaction with the safety of the organization.

8) To what extent are you personally satisfied with the safety performance of your organization? Check only one answer.

- Very satisfied.
- Moderately satisfied.
- Neither satisfied nor dissatisfied.
- Moderately dissatisfied.
- Very dissatisfied.

Managers were the most dissatisfied, and the mill manager, whose goal was safety excellence, was very dissatisfied (Table 9).

Satisfaction is subjective, as the results reflect. Despite living with two fatalities, people were not as dissatisfied as one might have expected. This was not a

good result. Dissatisfaction can spur the drive for improvement.

Question 9:

Where to Start Reducing Injuries

A last question asked respondents to rank areas that should be addressed to achieve a major reduction in injuries.

9) What do you think we should work on to achieve a major reduction in injuries? List your priority, with the one that you think is the most important assigned 1, the next 2, etc.:

Commitment and drive of management and supervision.

Improvement of plant equipment and physical facilities.

Safety organization (committees, systems, advisory services).

Training and attitude of working-level people.

Of the 42 respondents, only three thought that equipment or the safety organization should be given priority. Almost all said that the two "people" factors should be emphasized. Surprisingly, managers agreed with workers that management was the area needing the most work (Table 10).

CONCLUSIONS & RECOMMENDATIONS

Based on interviews, focus groups and site investigations—and particularly survey results—several conclusions emerged.

1) Safety performance had not changed, despite the fatalities. It was static at a mediocre level, not meeting the mill management's standards.

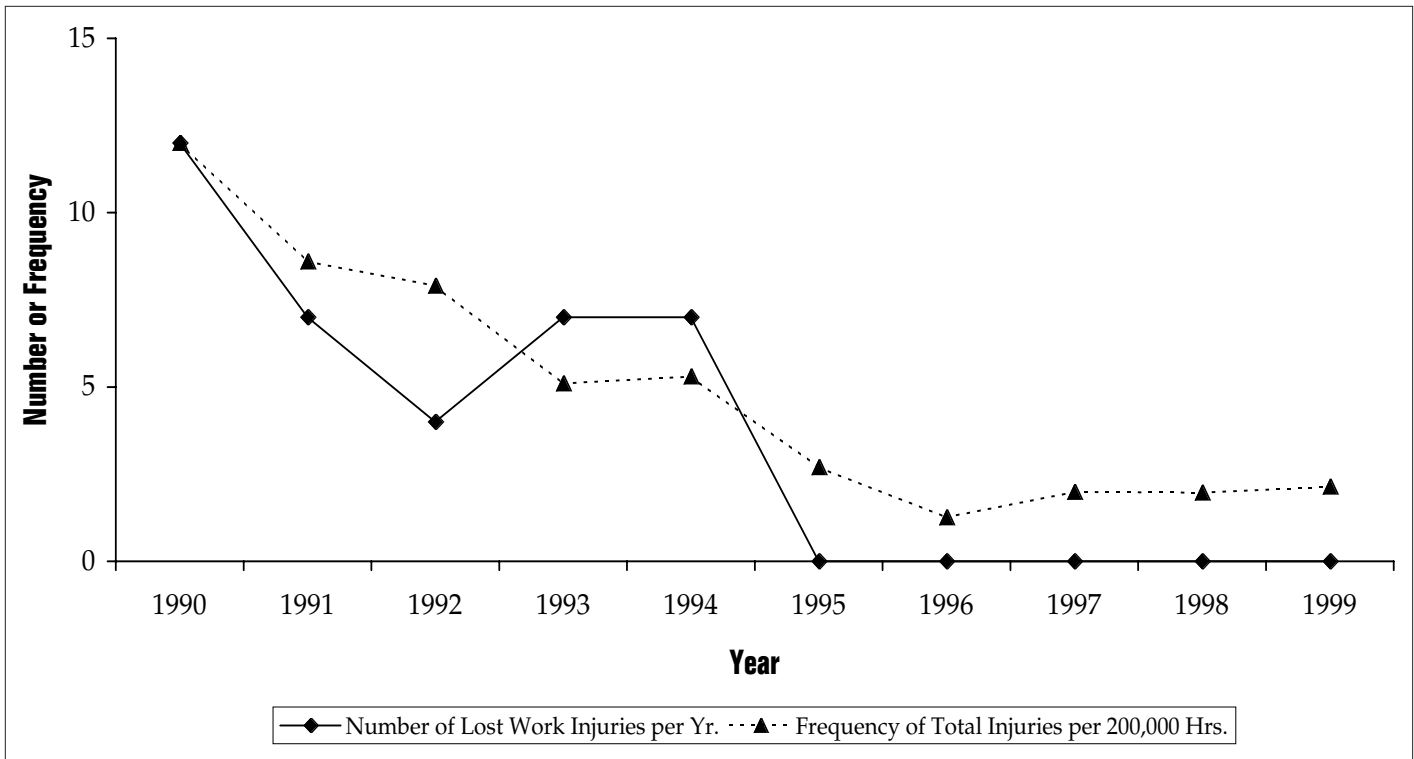
2) The problem was not in the equipment or the safety organization. Rather it involved critical "soft" factors—management commitment, line ownership of safety and worker attitudes. Where physical deficiencies were evident, they were usually due to acceptance of conditions that could be fairly easily corrected.

3) A key issue was the perception of disunity and the lack of clear direction from management. Safety excellence was not being demanded nor driven with passion. Managers did not believe that all injuries could be prevented.

4) Management was perceived as behaving inconsistently in setting standards, enforcing rules and in requiring results from itself and the workforce.

5) Worker attitude was indeed poor. Like the managers, workers felt they were not at fault, that "someone else should fix it." Nor were they much involved in safety. They did not believe that management was committed to safety and were not themselves committed.

FIGURE 2 Injuries: Number & Frequency



From these conclusions, a set of recommendations was constructed. They placed the onus on management to begin to truly drive safety:

1) Management must take control of the agenda and set the goal of a major reduction in injuries. The mill manager should take charge of the central safety committee. A clear vision and a set of values should be used to develop a common understanding of the mill's direction and forge a sense of unity. Managers must set demanding goals for their departments—and their compensation should be affected by the outcome. Managers must communicate a strong drive for change. They would have to be much tougher on themselves and demanding of action from their workers.

2) Management must reexamine its belief about prevention. Until everyone accepts—at least as a working premise—that all injuries could be prevented, it would be difficult to prevent them.

3) The safety rules must be reexamined by a mill-wide team. The rules should be well communicated, then consistently and rigorously enforced.

4) Stronger, more consistent leadership from management would have a positive effect on worker attitudes—the not-my-fault, not-my-responsibility approach is unacceptable. Attitudes could also be improved through much greater worker involvement in all aspects of safety, as a means of developing safety awareness. A tougher environment with more-meticulous attention to safety would allow nothing less than serious dedication to avoiding injuries.

MILL MANAGEMENT REACTS, GETS RESULTS

The company and mill management accepted the recommendations as a road map for reform. Motivated by the tragic events of 1994, the management team was determined to effect a “quantum leap” in performance. By phrasing it this way, team members committed themselves in their own minds and publicly with their people. Failure would be very evident.

The goal was to reduce the total injury frequency from about seven to less than two. The mill manager took charge of the central safety committee and began to use it as a vehicle for change. He established

demanding objectives for his managers. In addition, a unified approach was forged among the managers, requiring some changes among the senior group. Mill practices were thoroughly reviewed and revised. Since the systems themselves were fairly good, it was not so much a matter of creating new ones but rather of getting serious about those already in place.

Safety rules were improved and a consistent enforcement standard was adopted. This required a change in management's lax attitude as well as change at the working level. Greater worker involvement was initiated as well. To undertake specific tasks, subcommittees of workers and staff were formed and each senior manager was required to lead at least one of them.

These steps quickly paid off. Everyone had been shocked by the fatalities and the will to change was evident. Many workers had sought a more-rigorous attitude toward safety and welcomed the changes. At the end of March 1995, the mill, for the first time, completed a quarter without a lost-work injury. Total injuries had dropped as well. The mill went on to

TABLE 11

	90	91	92	93	94	Avg. 1990-94	95	96	97	98	99	Avg. 1995-99
# LW Injuries	12	7	4	7	7	7	0	0	0	0	0	0
LWIF	1.77	1.04	0.61	1.04	1.03	1.1	0	0	0	0	0	0
TRIF	12	8.6	7.9	5.1	5.3	7.8	2.7	1.26	1.99	1.97	2.4	2.1
Rank, among safest mills	8	4	4	4	7	4-6	2	3	3	~	1	1-3

TABLE 12 The Priority Individuals Give to Safety

Responding Group	% Who Ranked Safety First	
	1994	1996
Managers	55	73
Supervisors	69	80
Workers	21 →	75
All	49	76

TABLE 13 The Priority People Think Others Give to Safety

Responding Group	% Who Thought Others Rank Safety First			
	Managers		Workers	
	1994	1996	1994	1996
Managers	64	64	27	64
Supervisors	18	55	8	73
Workers	30	22	55	91
All	34	40	29 →	80

TABLE 14 Belief That Injuries Are Preventable

Responding Group	% Who Believe That All Injuries Can Be Prevented	
	1994	1996
Managers	45 →	91
Supervisors	41	45
Workers	14	25
All	34	46

TABLE 15 Involvement in Safety Activities

Responding Group	% Who Said That They Had Been Deeply or Quite Involved	
	1994	1996
Managers	27	54
Supervisors	24	36
Workers	14	16
All	21	31

record an excellent year in safety. By 1996, the facility had settled into a new lower level of injury frequency. It had no lost-work injuries from 1995 through 1999—meeting the goal of a big reduction in total injuries (Table 11). (*In the Pulp & Paper Canada competition for the safest mill in Canada, Kenora did not rank first through the 1995 to 1999 period only because one or more other mills also had no lost-work injuries and recorded more working hours.*)

CONFIRMATION OF THE POWER OF THE TECHNIQUE—THE REPEAT SURVEY

The mill was obviously pleased with the turnaround. However, many changes had been made and management was not sure which had been the real drivers. Management also saw that while the mill had lowered lost-work injuries, close calls were still occurring and the total injury frequency was still considerably worse than that of the safest companies. Thus, in 1996, the mill manager asked for a repeat survey. He hoped that this would give them pointers on how to improve further.

By this time, the questionnaire-survey technique had been developed further, tested in other consulting projects and was being used in research at the University of Toronto to study the safety management of some of the world's safest companies (Stewart 1999). It now featured 24 questions, including the key questions used in 1994. This provided an unusual opportunity to see what had transpired at Kenora as well as to assess the questionnaire's validity.

The 1996 survey was completed much as it had been two years previously, with 46 respondents—11 managers, 11 supervisors and superintendents and 24 workers. Again, all senior managers and about

one-third of the superintendents and supervisors were included. Most of the managers and some of the superintendents/supervisors had participated in 1994. Again, superintendents, supervisors and workers were selected at random.

Question 1: Priority Individuals Give to Safety

Seventy-six percent of all respondents reported that they now gave first priority to safety—a dramatic increase from the low result of 1994 (Table 12). No wonder that injuries had been greatly reduced.

Question 2: Priority Others Give to Safety

All involved claimed that the priority workers gave to safety had increased dramatically, and the numbers reflected this, going from 29 percent to 80 percent. Over 90 percent of workers now said that their peers gave safety first priority (Table 13). The results of this critical question were very positive.

However, some puzzling results were noted. Managers were disturbed that they had not been given credit for the turnaround. They had worked extensively on safety—implementing many new initiatives—yet workers still did not think they were giving it any more priority than in 1994. Where did the workers think the initiatives had come from? But the mill's managers needed to see that "virtue is its own reward"—and that in time, workers would likely change their view of management as, to an extent, supervisors had.

Question 3:

The Belief That All Injuries Can Be Prevented

Results from this question were disappointing. While most managers now believed that all injuries could be prevented, other levels were not so confident

(Table 14). Unless this belief was held more strongly, it would be difficult to improve further.

Question 4: Involvement in Safety Activities

Involvement had increased somewhat, particularly among managers, but it was still not perceived to be high (Table 15). Results were lower than mill management had anticipated. Perhaps the standards had changed. Obviously more work was needed.

Question 5:

The Extent to Which Safety Rules Are Obeyed

The proportion of people reporting that rules were being followed had increased dramatically, an excellent result (Table 16). With such a change in a key area, safety performance simply had to improve—as it had.

Question 8:

Satisfaction with the Mill's Safety Performance

The level of satisfaction with the mill's safety performance had improved as well (Table 17). Still, the level of total injuries was not at the truly excellent level. Would this high level of satisfaction cause them to revert to old ways?

The repeat survey predicted just what had transpired—a big turnaround. It also provided proof of the model's validity as well as the questionnaire's power and accuracy. For perhaps the first time, there was a quantitative way to measure the state of safety management and to critically assess management commitment.

Looking back, the mill manager had recognized that the key step was a turnaround in management commitment. He believed that acceptance by the leaders that all injuries could be prevented was critical to progress. This had not previ-

If managers had to take personal responsibility for an injury, they would take steps to prevent its occurrence.

ously been an explicit value, nor had management thought in those terms. Even the fatalities had been attributed to bad luck. The power of this belief soon became evident. If managers could no longer blame an injury on bad luck but had to take personal responsibility for it, they would take steps to prevent its occurrence. As the mill manager said, "It left no room for cop outs."

AN ADDENDUM

The questionnaire-survey technique can deliver four levels of insight:

1) The absolute level of the answers yields important information. For example, if most answers indicate that rules are often not obeyed, serious safety problems exist.

2) Comparison among the answers from management, supervision and workers yields important insights.

3) Results obtained at one time can be compared to those obtained later in order to assess whether improvement has occurred.

4) Results from the subject company can be compared to those of other companies, particularly those with excellent safety records and those with poor performance.

The 1994 survey had reported on the first two insights, the 1996 survey on the third. In a research project undertaken at the University of Toronto, benchmark data were obtained for the same 24-question survey from 400 people at five companies with world-class safety results (averaging 0.08 LWIF for five years) and from 270 people at five companies with poor safety records (averaging 20 LWIF). (Stewart 1999; 2001).

The research was partially completed by 1996 and some early comparative results were shown to the Kenora team. Predictably, the mill's results had not reached the world-class level, showing where improvement was possible and desirable. Two examples:

•Table 18 compares the extent that safety rules were followed at Kenora with the research data. (The BM prefix refers to the benchmark data.) In 1994, Kenora's results were poor, indicating that people paid little attention to the rules. That result was close to the level of answers from poor-safety-performing companies. A noticeable improvement had occurred by 1996, yet results still fell short of the companies with world-class safety.

TABLE 16 Observance of Safety Rules

Responding Group	% Who Said That People Always or Generally Obey the Safety Rules:	
	1994	1996
Managers	27	100
Supervisors	29	55
Workers	14	83
All	24	80

TABLE 17 Satisfaction with the Mill's Safety Performance

Responding Group	% Who Said That They Were Moderately or Very Satisfied:	
	1994	1996
Managers	27	100
Supervisors	41	82
Workers	28	75
All	33	82

•Table 19 shows the results for a question that assessed worker perceptions about safety training. This question was not part of the 1994 survey.

Workers at the mill said that they received a fair amount of training, considerably more than that reported by workers at poorly performing firms. However, they did not rate the extent of training nearly as high as did workers in companies with world-class safety. There is room for improvement here.

The mill achieved its turnaround in safety during a period of great change in the company. In 1996, Rainy River was purchased by Stone-Consolidated, a Montreal-based company. In 1997, Stone-Consolidated merged with Abitibi to become the largest producer of newsprint in the world. Boise-Cascade had always stressed safety, a commitment that con-

tinued under Rainy River. Hopefully, safety will fare well in the new company. The mill manager has moved on as have many other employees.

THE QUESTIONNAIRE-SURVEY TECHNIQUE COMPARED TO OTHER METHODS

In 1994, the Kenora mill was a fairly sophisticated mill with good management, a fairly good record of safety and basically sound safety systems and practices. Why had the facility been unable to identify and correct the major deficiencies in its performance?

As noted, outside agencies had recently completed two extensive safety audits. Both employed "traditional" techniques—observations at the location; interviews with workers and managers; examination of safety statistics; and review of systems and practices.

TABLE 18 Worker Views on Safety Rule Observance

Company or Co. Average	% of Workers Who Said That Rules Are Followed:			
	Without Exception	Generally	Sometimes, Sometimes Not	Often Not, Little Attention
Kenora, 1994	0	24	67	10
Kenora, 1996	0	81	17	2
BM, Best Result	37	60	0	3
BM, Safe Co. Avg.	25	64	10	1
BM, Unsafe Co. Avg.	4	35	54	7
BM, Worst Result	0	27	64	9

What is needed is a more direct way to measure the state of safety management in a subject company and compare it quantitatively to the same measurements at companies with excellent safety.

TABLE 19 Worker Safety Training

Company or Co. Average	% of Workers Who Said That Their Training in the Last Two Years Had Been:		
	Extensive or Considerable	Some	Little or None
Kenora, 1996	21	53	26
BM, Best Result	94	4	2
BM, Safe Co. Avg.	69	24	7
BM, Unsafe Co. Avg.	8	29	63
BM, Worst Result	4	8	88

The first audit noted some deficiencies, yet failed to identify critical weaknesses in "soft" factors such as management commitment and ownership by line managers. It mentioned inconsistencies in the application of procedures and in disciplinary action but did not identify the unacceptably low observance of rules. The report was not hard-hitting. Typically, it balanced praise with criticism.

Personnel from the Fort Frances mill conducted the second audit, which concentrated on safety procedures. While it offered useful suggestions, it too missed the central problems at Kenora.

By their nature, observational audits suffer serious handicaps. They are subjective, both in judgments made by observers and in input shared by those observed. Based on such audits, consultants are reluctant to make hard judgments or communicate bad news to management. After all, what they see is colored by their experience and what they say is largely based on opinion.

The only direct comparisons to the safest companies are also observational and rely on items such as checklists. The recommendations are prescriptive and are often not supported by direct evidence. Thus, even if one of these audits had identified the serious management issues, Kenora management would not likely have been convinced.

What is needed is a more direct way to measure the state of safety management in a subject company and compare it quantitatively to the same measurements at companies with excellent safety. Carefully constructed questionnaires, designed to yield quantitative data and administered to a broad cross-section of the workforce, provide an answer. They expose unexpected results and shed new light on the state of safety management. Conclusions are not only more valid, they

are much more credible. They also explicitly highlight issues for follow-up interviews and focus groups. Bolstered with concrete data, much harder-hitting, effective recommendations can be made.

The safety questionnaire-survey used here is the only one known to the author that is comprehensively based on a structured model of safety management, that yields quantitative data on the state of safety in an organization, including measurement of the critical "soft" elements such as management commitment. Its power has been magnified by obtaining quantitative benchmark data through extensive measurement at companies with excellent performance and those with poor safety. This is the only such benchmark data known to the author.

With these techniques and the benchmark data, the state of safety management can be quantitatively compared to the same measurements in companies with world-class safety records. This combination delivers a direct message about what needs to be corrected. Its power in initiating a major turnaround in safety was demonstrated in this project.

FUTURE OF THE QUESTIONNAIRE-SURVEY TECHNIQUE

The questionnaire-survey technique and the Future State Visioning methodology (Stewart 1993; 1994) have been linked to provide a novel, integrated process for use in safety consulting. As noted, the questionnaire-survey process delivers a comprehensive, quantitative assessment of the state of safety management. The Future State Visioning methodology provides an organized process for engaging management and others in developing a comprehensive vision for world-class safety and underpinning it with safety values—while also building commitment to the vision and creating the foundation

for a step change in safety. [Editor's note: *Managing for World Class Safety, a book documenting this research, was recently published by John Wiley & Sons Inc. and is now available from ASSE.*] ■

REFERENCES

Hurst, N.W., et al. "Measures of Safety Management Performance and Attitudes to Safety at Major Hazard Sites." *J. Loss Prev. Process Ind.* 9(1996): 161-172.

Krause, T.R. "Trends and Developments in Behavior-Based Safety." *Professional Safety*. Oct. 1997: 20-25.

Mahler Co. Inc. Advanced Management Skills Program. Fair Lawn, NJ: Mahler Co. Inc.

Petersen, D. *Safety By Objectives*. New York: Van Nostrand Reinhold, 1996.

Stewart, J.M. "Future State Visioning—A Powerful Leadership Process." *Long Range Planning*. 26(1993): 89-98.

Stewart, J.M. "Future State Visioning Technique (and the Turnaround in Safety) at National Rubber." *Planning Review*. March-April 1994: 20-24, 33.

Stewart, J.M. "Managing for World Class Safety." Report on Research on the Management of Safety. Toronto: Rotman School of Management, University of Toronto, 1999 (no longer in print).

Stewart, J.M. *Managing for World Class Safety*. New York: John Wiley & Sons Inc., 2001.

Stewart, J.M. "The Multi-Ball Juggler." *Business Quarterly*. Summer 1993: 32-39.

J.M. Stewart, Ph.D., is president of J.M. Stewart Enterprises Inc., a consulting company that specializes in safety management. He was formerly a senior vice president of DuPont Canada Inc. From 1991 through 1998, he was an executive-in-residence and adjunct professor of strategic management at the Rotman School of Management at the University of Toronto, where he conducted research on business strategy, self-management and safety management. Stewart holds a B.S. from the University of Toronto and a Ph.D. from Imperial College (London), both in Chemical Engineering.

READER FEEDBACK

Did you find this article interesting and useful? Circle the corresponding number on the reader service card.

YES	34
SOMEWHAT	35
NO	36