

# STRESS

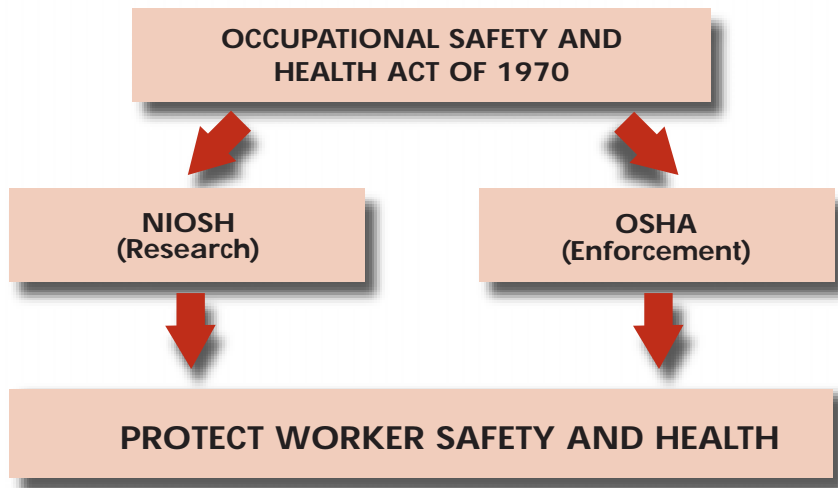
**...AT WORK**



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Public Health Service  
Centers for Disease Control and Prevention  
National Institute for Occupational Safety and Health

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The **National Institute for Occupational Safety and Health (NIOSH)** is the Federal agency responsible for conducting research and making recommendations for the prevention of work-related illness and injury. NIOSH is part of the U.S. Department of Health and Human Services; it is distinct from the Occupational Safety and Health Administration (OSHA), which is a regulatory agency located in the U.S. Department of Labor.



As part of its mandate, NIOSH is directed by Congress to study the psychological aspects of occupational safety and health, including stress at work. NIOSH works in collaboration with industry, labor, and universities to better understand the stress of modern work, the effects of stress on worker safety and health, and ways to reduce stress in the workplace.

# STRESS

## *...AT WORK*



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# **STRESS...AT WORK**

*The nature of work is changing at whirlwind speed. Perhaps now more than ever before, job stress poses a threat to the health of workers and, in turn, to the health of organizations. Through its research program in job stress and through educational materials such as this booklet, NIOSH is committed to providing organizations with knowledge to reduce this threat.*

*This booklet highlights knowledge about the causes of stress at work and outlines steps that can be taken to prevent job stress.*

## *Stress in Today's Workplace*

The longer he waited, the more David worried. For weeks he had been plagued by aching muscles, loss of appetite, restless sleep, and a complete sense of exhaustion. At first he tried to ignore these problems, but eventually he became so short-tempered and irritable that his wife insisted he get a checkup. Now, sitting in the doctor's office and wondering what the verdict would be, he didn't even notice when Theresa took the seat beside him. They had been good friends when she worked in the front office at the plant, but he hadn't seen her since she left three years ago to take a job as a customer service representative. Her gentle poke in the ribs brought him around, and within minutes they were talking and gossiping as if she had never left.

“You got out just in time,”

he told her. “Since the reorganization, nobody feels safe. It used to be that as long as you did your work, you had a job. That's not for sure anymore. They expect the same production rates even



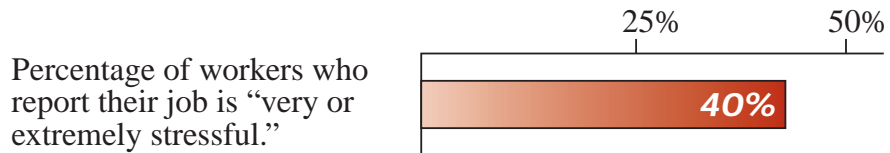
though two guys are now doing the work of three. We're so backed up I'm working twelve-hour shifts six days a week. I swear I hear those machines humming in my sleep. Guys are calling in sick just to get a break. Morale is so bad they're talking about bringing in some consultants to figure out a better way to get the job done.”

“Well, I really miss you guys,” she said. “I’m afraid I jumped from the frying pan into the fire. In my new job, the computer routes the calls and they never stop. I even have to schedule my bathroom breaks. All I hear the whole day are complaints from unhappy customers. I try to be helpful and sympathetic, but I can’t promise anything without getting my boss’s approval. Most of the time I’m caught between what the customer wants and company policy. I’m not sure who I’m supposed to keep happy. The other reps are so uptight and tense they don’t even talk to one another. We all go to our own little cubicles and stay there until quitting time. To make matters worse, my mother’s health is deteriorating. If only I could use some of my sick time to look after her. No wonder I’m in here with migraine headaches and high blood pressure. A lot of the reps are seeing the employee assistance counselor and taking stress management classes, which seems to help. But sooner or later, someone will have to make some changes in the way the place is run.”

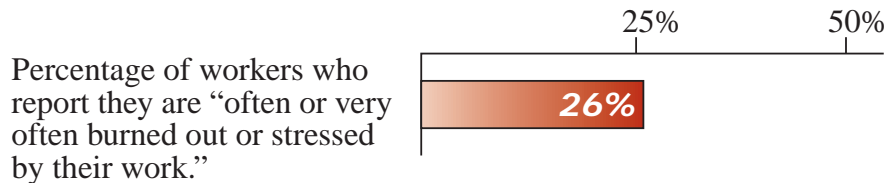


## What Workers Say About Stress on the Job

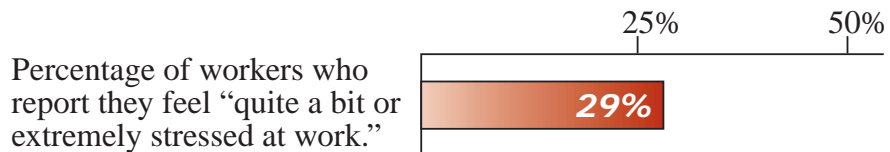
### Survey by Northwestern National Life



### Survey by the Families and Work Institute



### Survey by Yale University



## ***Scope of Stress in the American Workplace***

David's and Theresa's stories are unfortunate but not unusual. Job stress has become a common and costly problem in the American workplace, leaving few workers untouched. For example, studies report the following:

- One-fourth of employees view their jobs as the number one stressor in their lives.

—*Northwestern National Life*

- Three-fourths of employees believe the worker has more on-the-job stress than a generation ago.

—*Princeton Survey Research Associates*

- Problems at work are more strongly associated with health complaints than are any other life stressor—more so than even financial problems or family problems.

—*St. Paul Fire and Marine Insurance Co.*

Fortunately, research on job stress has greatly expanded in recent years. But in spite of this attention, confusion remains about the causes, effects, and prevention of job stress. This booklet summarizes what is known about job stress and what can be done about it.

## ***What is Job Stress?***

Job stress can be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker. Job stress can lead to poor health and even injury.

The concept of job stress is often confused with challenge, but these concepts are not the same. Challenge energizes us psychologically and physically, and it motivates us to learn new skills and master our jobs. When a challenge is met, we feel relaxed and satisfied. Thus, challenge is an important ingredient for healthy and productive work. The importance of challenge in our work lives is probably what people are referring to when they say “a little bit of stress is good for you.”

But for David and Theresa, the situation is different—the challenge has turned into job demands that cannot be met, relaxation has turned to exhaustion, and a sense of satisfaction has turned into feelings of stress. In short, the stage is set for illness, injury, and job failure.



***Job stress  
results when the requirements  
of the job do not match the  
capabilities, resources,  
or needs of the worker.***

## What are the Causes of Job Stress?

Nearly everyone agrees that job stress results from the interaction of the worker and the conditions of work. Views differ, however, on the importance of *worker characteristics* versus *working conditions* as the primary cause of job stress. These differing viewpoints are important because they suggest different ways to prevent stress at work.

According to one school of thought, differences in individual characteristics such as personality and coping style are most important in predicting whether certain job conditions will result in stress—in other words, what is stressful for one person may not be a problem for someone else. This viewpoint leads to prevention strategies that focus on workers and ways to help them cope with demanding job conditions.

Although the importance of individual differences cannot be ignored, scientific evidence suggests that certain working conditions are stressful to most people. The excessive workload demands and conflicting expectations described in David's and Theresa's stories are good examples. Such evidence argues for a greater emphasis on working conditions as the key source of job stress, and for job redesign as a primary prevention strategy.

In 1960, a Michigan court upheld a compensation claim by an automotive assembly-line worker who had difficulty keeping up with the pressures of the production line. To avoid falling behind, he tried to work on several assemblies at the same time and often got parts mixed up. As a result, he was subjected to repeated criticism from the foreman. Eventually he suffered a psychological breakdown.

By 1995, nearly one-half of the States allowed worker compensation claims for emotional disorders and disability due to stress on the job [note, however, that courts are reluctant to uphold claims for what can be considered ordinary working conditions or just hard work].

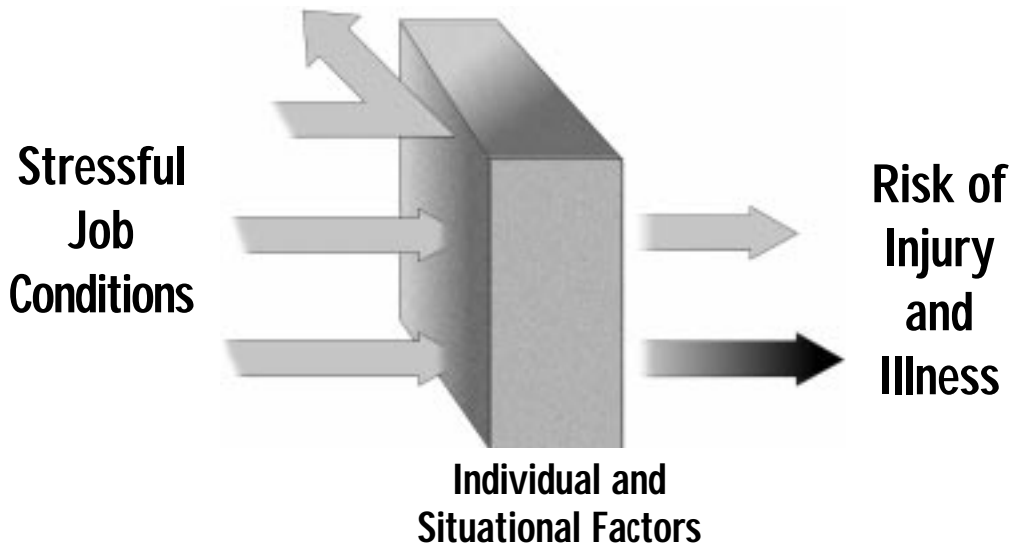
—1995 *Workers Compensation Yearbook*

## ***NIOSH Approach to Job Stress***

On the basis of experience and research, NIOSH favors the view that working conditions play a primary role in causing job stress. However, the role of individual factors is not ignored. According to the NIOSH view, exposure to stressful working conditions (called job stressors) can have a direct influence on worker safety and health. But as shown below, individual and other situational factors can intervene to strengthen or weaken this influence. Theresa's need to care for her ill mother is an increasingly common example of an individual or situational factor that may intensify the effects of stressful working conditions. Examples of individual and situational factors that can help to reduce the effects of stressful working conditions include the following:

- Balance between work and family or personal life
- A support network of friends and coworkers
- A relaxed and positive outlook

### ***NIOSH Model of Job Stress***



## **Job Conditions That May Lead to Stress**

**The Design of Tasks.** Heavy workload, infrequent rest breaks, long work hours and shiftwork; hectic and routine tasks that have little inherent meaning, do not utilize workers' skills, and provide little sense of control.

*Example:* David works to the point of exhaustion. Theresa is tied to the computer, allowing little room for flexibility, self-initiative, or rest.

**Management Style.** Lack of participation by workers in decision-making, poor communication in the organization, lack of family-friendly policies.

*Example:* Theresa needs to get the boss's approval for everything, and the company is insensitive to her family needs.

**Interpersonal Relationships.** Poor social environment and lack of support or help from coworkers and supervisors.

*Example:* Theresa's physical isolation reduces her opportunities to interact with other workers or receive help from them.

**Work Roles.** Conflicting or uncertain job expectations, too much responsibility, too many "hats to wear."

*Example:* Theresa is often caught in a difficult situation trying to satisfy both the customer's needs and the company's expectations.

**Career Concerns.** Job insecurity and lack of opportunity for growth, advancement, or promotion; rapid changes for which workers are unprepared.

*Example:* Since the reorganization at David's plant, everyone is worried about their future with the company and what will happen next.

**Environmental Conditions.** Unpleasant or dangerous physical conditions such as crowding, noise, air pollution, or ergonomic problems.

*Example:* David is exposed to constant noise at work.

## ***Job Stress and Health***

Stress sets off an alarm in the brain, which responds by preparing the body for defensive action. The nervous system is aroused and hormones are released to sharpen the senses, quicken the pulse, deepen respiration, and tense the muscles. This response (sometimes called the fight or flight response) is important because it helps us defend against threatening situations. The response is preprogrammed biologically. Everyone responds in much the same way, regardless of whether the stressful situation is at work or home.

Short-lived or infrequent episodes of stress pose little risk. But when stressful situations go unresolved, the body is kept in a constant state of activation, which increases the rate of wear and tear to biological systems. Ultimately, fatigue or damage results, and the ability of the body to repair and defend itself can become seriously compromised. As a result, the risk of injury or disease escalates.

In the past 20 years, many studies have looked at the relationship between job stress and a variety of ailments. Mood and sleep disturbances, upset stomach and headache, and disturbed relationships with family and friends are examples of stress-related problems that are quick to develop and are commonly seen in these studies. These early signs of job stress are usually easy to recognize. But the effects of job stress on chronic diseases are more difficult to see because chronic diseases take a long time to develop and can be influenced by many factors other than stress. Nonetheless, evidence is rapidly accumulating to suggest that stress plays an important role in several types of chronic health problems—especially cardiovascular disease, musculoskeletal disorders, and psychological disorders.

Health care expenditures are nearly 50% greater for workers who report high levels of stress.

—*Journal of Occupational and Environmental Medicine*

## **Early Warning Signs of Job Stress**

**Headache**  
**Sleep disturbances**  
**Difficulty in concentrating**  
**Short temper**  
**Upset stomach**  
**Job dissatisfaction**  
**Low morale**



### **Job Stress and Health: What the Research Tells Us**

#### **Cardiovascular Disease**

Many studies suggest that psychologically demanding jobs that allow employees little control over the work process increase the risk of cardiovascular disease.

#### **Musculoskeletal Disorders**

On the basis of research by NIOSH and many other organizations, it is widely believed that job stress increases the risk for development of back and upper-extremity musculoskeletal disorders.

#### **Psychological Disorders**

Several studies suggest that differences in rates of mental health problems (such as depression and burnout) for various occupations are due partly to differences in job stress levels. (Economic and lifestyle differences between occupations may also contribute to some of these problems.)

#### **Workplace Injury**

Although more study is needed, there is a growing concern that stressful working conditions interfere with safe work practices and set the stage for injuries at work.

#### **Suicide, Cancer, Ulcers, and Impaired Immune Function**

Some studies suggest a relationship between stressful working conditions and these health problems. However, more research is needed before firm conclusions can be drawn.

—*Encyclopaedia of Occupational Safety and Health*

## ***Stress, Health, and Productivity***

Some employers assume that stressful working conditions are a necessary evil—that companies must turn up the pressure on workers and set aside health concerns to remain productive and profitable in today’s economy. But research findings challenge this belief. Studies show that stressful working conditions are actually associated with increased absenteeism, tardiness, and intentions by workers to quit their jobs—all of which have a negative effect on the bottom line.

Recent studies of so-called healthy organizations suggest that policies benefiting worker health also benefit the bottom line. A healthy organization is defined as one that has low rates of illness, injury, and disability in its workforce and is also competitive in the marketplace. NIOSH research has identified organizational characteristics associated with both healthy, low-stress work and high levels of productivity. Examples of these characteristics include the following:

- Recognition of employees for good work performance
- Opportunities for career development
- An organizational culture that values the individual worker
- Management actions that are consistent with organizational values

### ***Stress Prevention and Job Performance***

The St. Paul Fire and Marine Insurance Company conducted several studies on the effects of stress prevention programs in hospital settings. Program activities included (1) employee and management education on job stress, (2) changes in hospital policies and procedures to reduce organizational sources of stress, and (3) establishment of employee assistance programs.

In one study, the frequency of medication errors declined by 50% after prevention activities were implemented in a 700-bed hospital. In a second study, there was a 70% reduction in malpractice claims in 22 hospitals that implemented stress prevention activities. In contrast, there was no reduction in claims in a matched group of 22 hospitals that did not implement stress prevention activities.

—*Journal of Applied Psychology*

According to data from the Bureau of Labor Statistics, workers who must take time off work because of stress, anxiety, or a related disorder will be off the job for about 20 days.

—*Bureau of Labor Statistics*



## **What Can Be Done About Job Stress?**

The examples of Theresa and David illustrate two different approaches for dealing with stress at work.

**Stress Management.** Theresa's company is providing stress management training and an employee assistance program (EAP) to improve the ability of workers to cope with difficult work situations. Nearly one-half of large companies in the United States provide some type of stress management training for their workforces. Stress management programs teach workers about the nature and sources of stress, the effects of stress on health, and personal skills to reduce stress—for example, time management or relaxation exercises. (EAPs provide individual counseling for employees with both work and personal problems.) Stress management training may rapidly reduce stress symptoms such as anxiety and sleep disturbances; it also has the advantage of being inexpensive and easy to implement. However, stress management programs have two major disadvantages:

- The beneficial effects on stress symptoms are often short-lived.
- They often ignore important root causes of stress because they focus on the worker and not the environment.

**Organizational Change.** In contrast to stress management training and EAP programs, David's company is trying to reduce job stress by bringing in a consultant to recommend ways to improve working conditions. This approach is the most direct way to reduce stress at work. It involves the identification of stressful aspects of work (e.g., excessive workload, conflicting expectations) and the design of strategies to reduce or eliminate the identified stressors. The advantage of this approach is that it deals directly with the root causes of stress at work. However, managers are sometimes uncomfortable with this approach because it can involve changes in work routines or production schedules, or changes in the organizational structure.

**As a general rule, actions to reduce job stress should give top priority to organizational change to improve working conditions. But even the most conscientious efforts to improve working conditions are unlikely to eliminate stress completely for all workers. For this reason, a combination of organizational change and stress management is often the most useful approach for preventing stress at work.**

## Preventing Stress at Work: A Comprehensive Approach



**ORGANIZATIONAL CHANGE**



**STRESS MANAGEMENT**



**A HEALTHY WORKPLACE**

Reduced stress disorders  
Satisfied and productive workers  
Profitable and competitive organizations

### ***How to Change the Organization to Prevent Job Stress***

- Ensure that the workload is in line with workers' capabilities and resources.
- Design jobs to provide meaning, stimulation, and opportunities for workers to use their skills.
- Clearly define workers' roles and responsibilities.
- Give workers opportunities to participate in decisions and actions affecting their jobs.
- Improve communications—reduce uncertainty about career development and future employment prospects.
- Provide opportunities for social interaction among workers.
- Establish work schedules that are compatible with demands and responsibilities outside the job.

—*American Psychologist*

## Preventing Job Stress – Getting Started

No standardized approaches or simple “how to” manuals exist for developing a stress prevention program. Program design and appropriate solutions will be influenced by several factors—the size and complexity of the organization, available resources, and especially the unique types of stress problems faced by the organization. In David’s company, for example, the main problem is work overload. Theresa, on the other hand, is bothered by difficult interactions with the public and an inflexible work schedule.



Although it is not possible to give a universal prescription for preventing stress at work, it is possible to offer guidelines on the process of stress prevention in organizations. In all situations, the process for stress prevention programs involves three distinct steps: *problem identification*, *intervention*, and *evaluation*. These steps are outlined beginning on page 17. For this process to succeed, organizations need to be adequately prepared. At a minimum, preparation for a stress prevention program should include the following:

- Building general awareness about job stress (causes, costs, and control)
- Securing top management commitment and support for the program
- Incorporating employee input and involvement in all phases of the program
- Establishing the technical capacity to conduct the program (e.g., specialized training for in-house staff or use of job stress consultants)

Bringing workers or workers and managers together in a committee or problem-solving group may be an especially useful approach for developing a stress prevention program. Research has shown these participatory efforts to be effective in dealing with ergonomic problems in the workplace, partly because they capitalize on workers’ firsthand knowledge of hazards encountered in their jobs. However, when forming such working groups, care must be taken to be sure that they are in compliance with current labor laws.\*

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\*The National Labor Relations Act may limit the form and structure of employee involvement in worker-management teams or groups. Employers should seek legal assistance if they are unsure of their responsibilities or obligations under the National Labor Relations Act.

## **Steps Toward Prevention**

Low morale, health and job complaints, and employee turnover often provide the first signs of job stress. But sometimes there are no clues, especially if employees are fearful of losing their jobs. Lack of obvious or widespread signs is not a good reason to dismiss concerns about job stress or minimize the importance of a prevention program.

**Step 1 – Identify the Problem.** The best method to explore the scope and source of a suspected stress problem in an organization depends partly on the size of the organization and the available resources. Group discussions among managers, labor representatives, and employees can provide rich sources of information. Such discussions may be all that is needed to track down and remedy stress problems in a small company. In a larger organization, such discussions can be used to help design formal surveys for gathering input about stressful job conditions from large numbers of employees.

Regardless of the method used to collect data, information should be obtained about employee perceptions of their job conditions and perceived levels of stress, health, and satisfaction. The list of job conditions that may lead to stress (page 9) and the warning signs and effects of stress (page 11) provide good starting points for deciding what information to collect.

Objective measures such as absenteeism, illness and turnover rates, or performance problems can also be examined to gauge the presence and scope of job stress. However, these measures are only rough indicators of job stress—at best.

Data from discussions, surveys, and other sources should be summarized and analyzed to answer questions about the location of a stress problem and job conditions that may be responsible—for example, are problems present throughout the organization or confined to single departments or specific jobs?

- **Hold group discussions with employees.**
- **Design an employee survey.**
- **Measure employee perceptions of job conditions, stress, health, and satisfaction.**
- **Collect objective data.**
- **Analyze data to identify problem locations and stressful job conditions.**

**Survey design, data analysis, and other aspects of a stress prevention program may require the help of experts from a local university or consulting firm. However, overall authority for the prevention program should remain in the organization.**

**Step 2 – Design and Implement Interventions.** Once the sources of stress at work have been identified and the scope of the problem is understood, the stage is set for design and implementation of an intervention strategy.

In small organizations, the informal discussions that helped identify stress problems may also produce fruitful ideas for prevention. In large organizations, a more formal process may be needed. Frequently, a team is asked to develop recommendations based on analysis of data from Step 1 and consultation with outside experts.

Certain problems, such as a hostile work environment, may be pervasive in the organization and require company-wide interventions. Other problems such as excessive workload may exist only in some departments and thus require more narrow solutions such as redesign of the way a job is performed. Still other problems may be specific to certain employees and resistant to any kind of organizational change, calling instead for stress management or employee assistance interventions. Some interventions might be implemented rapidly (e.g., improved communication, stress management training), but others may require additional time to put into place (e.g., redesign of a manufacturing process).

Before any intervention occurs, employees should be informed about actions that will be taken and when they will occur. A kick-off event, such as an all-hands meeting, is often useful for this purpose.

- **Target source of stress for change.**
- **Propose and prioritize intervention strategies.**
- **Communicate planned interventions to employees.**
- **Implement interventions.**

**Step 3 – Evaluate the Interventions.** Evaluation is an essential step in the intervention process. Evaluation is necessary to determine whether the intervention is producing desired effects and whether changes in direction are needed.

Time frames for evaluating interventions should be established. Interventions involving organizational change should receive both short- and long-term scrutiny. Short-term evaluations might be done quarterly to provide an early indication of program effectiveness or possible need for redirection. Many interventions produce initial effects that do not persist. Long-term evaluations are often conducted annually and are necessary to determine whether interventions produce lasting effects.

Evaluations should focus on the same types of information collected during the problem identification phase of the intervention, including information from employees about working conditions, levels of perceived stress, health problems, and satisfaction. Employee perceptions are usually the most sensitive measure of stressful working conditions and often provide the first indication of intervention effectiveness. Adding objective measures such as absenteeism and health care costs may also be useful. However, the effects of job stress interventions on such measures tend to be less clear-cut and can take a long time to appear.

- **Conduct both short- and long-term evaluations.**
- **Measure employee perceptions of job conditions, stress, health, and satisfaction.**
- **Include objective measures.**
- **Refine the intervention strategy and return to Step 1.**

**The job stress prevention process does not end with evaluation. Rather, job stress prevention should be seen as a continuous process that uses evaluation data to refine or redirect the intervention strategy.**

The following pages provide examples of actions some organizations have taken to help prevent stress in their workplaces.

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## ***Stress Prevention Programs: What Some Organizations Have Done***

### ***Example 1***

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***A Small Service Organization.*** A department head in a small public service organization sensed an escalating level of tension and deteriorating morale among her staff. Job dissatisfaction and health symptoms such as headaches also seemed to be on the rise. Suspecting that stress was a developing problem in the department, she decided to hold a series of all-hands meetings with employees in the different work units of the department to explore this concern further. These meetings could be best described as brainstorming sessions where individual employees freely expressed their views about the scope and sources of stress in their units and the measures that might be implemented to bring the problem under control.



Using the information collected in these meetings and in meetings with middle managers, she concluded that a serious problem probably existed and that quick action was needed. Because she was relatively unfamiliar with the job stress field, she decided to seek help from a faculty member at a local university who taught courses on job stress and organizational behavior.

After reviewing the information collected at the brainstorming sessions, they decided it would be useful for the faculty member to conduct informal classes to raise awareness about job stress—its causes, effects, and prevention—for all workers and managers in the department. It was also decided that a survey would be useful to obtain a more reliable picture of problematic job conditions and stress-related health complaints in the department. The faculty member used information from the meetings with workers and managers to design the survey. The faculty member was also involved in the distribution and collection of the anonymous survey to ensure that workers felt free to respond honestly and openly about what was bothering them. He then helped the department head analyze and interpret the data.

Analysis of the survey data suggested that three types of job conditions were linked to stress complaints among workers:

- Unrealistic deadlines
- Low levels of support from supervisors
- Lack of worker involvement in decision-making.

Having pinpointed these problems, the department head developed and prioritized a list of corrective measures for implementation. Examples of these actions included (1) greater participation of employees in work scheduling to reduce unrealistic deadlines and (2) more frequent meetings between workers and managers to keep supervisors and workers updated on developing problems.

## ***Example 2***

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### ***A Large Manufacturing Company.***

Although no widespread signs of stress were evident at work, the corporate medical director of a large manufacturing company thought it would be useful to establish a stress prevention program as a proactive measure. As a first step he discussed this concept with senior management and with union leaders. Together, they decided to organize a labor-management team to develop the program. The team comprised representatives from labor, the medical/employee assistance department, the human resources department, and an outside human resources consulting firm. The consulting firm provided technical advice about program design, implementation, and evaluation. Financial resources for the team and program came from senior management, who made it clear that they supported this activity. The team designed a two-part program. One part focused on management practices and working conditions that could lead to stress. The second part focused on individual health and well-being.



To begin the part of the program dealing with management practices and job conditions, the team worked with the consulting firm to add new questions about job stress to the company's existing employee opinion survey. The survey data were used by the team to identify stressful working conditions and to suggest changes at the work group and/or organizational level. The employee health and well-being part of the program consisted of 12 weekly training sessions. During these sessions, workers and managers learned about common sources and effects of stress at work, and about self-protection strategies such as relaxation methods and improved health behaviors. The training sessions were offered during both work and nonwork hours.

The team followed up with quarterly surveys of working conditions and stress symptoms to closely monitor the effectiveness of this two-part program.

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These examples are based on adaptations of actual situations. For other examples of job stress interventions, see the *Conditions of Work Digest*, Vol. 11/2, pp. 139–275. This publication may be obtained by contacting the ILO Publications Center at P.O. Box 753, Waldorf, MD 20604 (Telephone: 301–638–3152). Or call NIOSH at 1–800–35–NIOSH.



## **Sources Used in Preparing This Document**

### **1995 Workers' Compensation Year Book**

Elisburg D [1995]. Workplace stress: legal developments, economic pressures, and violence. In: Burton JF, ed. 1995 Workers' Compensation Year Book. Horsham, PA: LRP Publications, pp. I-217–I-222.

### **American Psychologist**

Sauter SL, Murphy LR, Hurrell JJ, Jr. [1990]. Prevention of work-related psychological disorders. *American Psychologist* 45(10):1146–1158.

### **Bureau of Labor Statistics**

BLS [1996]. Bureau of Labor Statistics Homepage [<http://stats.bls.gov/>]. Tabular data, 1992–96: Number and percentage distribution of nonfatal occupational injuries and illnesses involving days away from work, by nature of injury or illness and number of days away from work. Date accessed: 1998.

### **Encyclopaedia of Occupational Health and Safety**

Sauter S, Hurrell J, Murphy L, Levi L [1997]. Psychosocial and organizational factors. In: Stellman J, ed. *Encyclopaedia of Occupational Health and Safety*. Vol. 1. Geneva, Switzerland: International Labour Office, pp. 34.1–34.77.

### **Families and Work Institute**

Bond JT, Galinsky E, Swanberg JE [1998]. The 1997 national study of the changing workforce. New York, NY: Families and Work Institute.

### **Journal of Applied Psychology**

Jones JW, Barge BN, Steffy BD, Fay LM, Kuntz LK, Wuebker LJ [1988]. Stress and medical malpractice: organizational risk assessment and intervention. *Journal of Applied Psychology* 73(4):727–735.

### **Journal of Occupational and Environmental Medicine**

Goetzel RZ, Anderson DR, Whitmer RW, Ozminkowski RJ, Dunn RL, Wasserman J, Health Enhancement Research Organization (HERO) Research Committee [1998]. The relationship between modifiable health risks and health care expenditures: an analysis of the multi-employer HERO health risk and cost database. *Journal of Occupational and Environmental Medicine* 40(10).

**Northwestern National Life** (now ReliaStar Financial Corporation)

Northwestern National Life Insurance Company [1991]. Employee burnout: America's newest epidemic. Minneapolis, MN: Northwestern National Life Insurance Company. (Note: This reference is the source for the statistics cited on page 5.)

Northwestern National Life Insurance Company [1992]. Employee burnout: causes and cures. Minneapolis, MN: Northwestern National Life Insurance Company. (Note: This reference is the source for the information presented in the graph on page 4.)

**Princeton Survey Research Associates**

Princeton Survey Research Associates [1997]. Labor day survey: state of workers. Princeton, NJ: Princeton Survey Research Associates.

**St. Paul Fire and Marine Insurance Company**

St. Paul Fire and Marine Insurance Company [1992]. American workers under pressure technical report. St. Paul, MN: St. Paul Fire and Marine Insurance Company.

**Yale University**

Barsade S, Wiesenfeld B, The Marlin Company [1997]. Attitudes in the American workplace III. New Haven, CT: Yale University School of Management.





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