

How Integrating Your Wellness Program with Your Occupational Health & Safety Program Gains You Benefits

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Both wellness and occupational health and safety (OHS) have benefits to employees and employers alike. While both can be implemented independent of each other, there are proven additional benefits to merging or integrating the two programs into one overarching employee health, safety and wellness (HSW) program. It is actually a synergistic relationship where the total is greater than the sum of the parts.

This article will examine areas where this makes perfect sense, some of the evidence, including research papers, articles and texts, NIOSH's research and its two symposia on it and many organizations that have merged the two with reported benefits.

Readers will gain a self-generated list of areas to merge, where to start, what qualifications work for their HSW department and plenty of opportunities to benchmark their companies.

By the end of this article, readers should be able to:

- Explain the benefits of integrating their wellness program with their OHS program;
- Locate resources for integrating wellness with OHS;
- Describe several ways of integrating the two programs;
- List and detail organizations that successfully integrated their programs and how they did it; and
- Begin to merge or integrate their wellness and OHS programs.

As readers go through the material, here are some helpful considerations to help apply the premises (especially if hoping to use this reading at the reader's organization):

- What sort of objective data am I looking for?
- What is my upper management looking for?
- What other organizations can I benchmark for comparison?
- What sort of evidence or "proof" of successes do I need to make a case for combining OHS and wellness?

Let us start with areas where it makes sense. Here are a dozen aspects of OHS where merging or integrating wellness just makes perfect sense.

- 1. Obesity and musculoskeletal disorders (MSDs), cancers, etc.:** Studies have demonstrated that persons who are overweight or obese (O/O) are more likely to have musculoskeletal disorders (MSDs) (Kort & Baldry, 2002). A recent Duke University study also showed that persons who are O/O are more likely to have greater workers' compensation (WC) claims (DukeHealth.org, 2007). Additionally, persons who are O/O have greater risks of several types of cancer, including breast, colon, lung, prostate and others (National Cancer Institute, 2004). It becomes quickly obvious that targeting obesity can recoup multiple returns for work-related MSDs, WC claims and cancer prevention. So, while training workers on carcinogens in the workplace, discuss how O/O is linked with cancer. While teaching ergonomics, discuss how persons who are O/O are more likely to develop MSDs.
- 2. Smoking and MSDs, carboxyhemoglobin (COHgb) levels/risk and asbestos:** Smoking is an obvious area to focus on for wellness, but it also is important from an OHS standpoint. Studies have shown that smokers tend to have more MSDs (Jain, 2006). Smokers also have higher levels of COHgb, which is a hemoglobin red blood cell that carries a carbon monoxide (CO) molecule rather than an oxygen molecule. This puts smokers at greater risk of CO poisoning depending on the level in their blood (Nordenberg, et al., 1990). OSHA Region 1 (the northeast) investigated a fatality many years ago where a worker died of CO poisoning from a combination of 3 sources—CO from fork trucks, CO from smoking and COHgb from methylene chloride (MeCl) exposure. MeCl metabolizes in the body into COHgb. None of the three sources individually were enough to be fatal; however, the combination of all three was enough (interview with Douglas Lawson). The benefits of integrated training, etc. are obvious.

3. **Fitness and MSDs:** Fitness level and MSDs are inversely related, meaning as one goes up, the other goes down (and vice versa) (NIOSH, 1997). Since fitness counts, facilitating and supporting worker exercise programs make even more sense than just passive encouragement.
4. **Job activity level and prostate cancer:** A recent study showed that job activity level and prostate cancer rates were also inversely related (Krishnadasan, et al., 2008). So if we get workers more active in their jobs and educate them about the benefits, they will be less likely to develop prostate cancer and will likely benefit with lower O/O rates and those related benefits above.
5. **Exposures off and on the job—*asbestos, CO, solvents, acids/bases, sensitizers, lead, etc.*:** It is pretty straightforward. If we are trying to prevent worker exposures to certain hazardous substances because of the potential for ill health effects, why would we not also try to prevent these same exposures off the job? We would and do so, of course. We can potentially be exposed to many chemicals and other hazardous substances at home and off the job. Asbestos in older homes, CO from our vehicles (and other combustion sources), solvents in cleaners and degreasers, acids and bases in cleaners—the list goes on and on.
6. **Healthy foods at work, obesity and cancers, etc.:** Workers eat at least one meal at work, and sometimes two or three meals are eaten at work in a day. Nutritional needs are at least one-half of the O/O problem in the U.S. We tend to eat whatever is readily available to us regardless of its nutritional value and our willpower. As being O/O is now linked to several cancers and other chronic and costly health issues (diabetes, metabolic syndrome, heart disease, etc.), providing healthier foods at work is an easy and effective means of reducing O/O.
7. **Driving safety (single greatest cause of work fatalities in U.S.):** Without even counting fatal accidents during normal work commutes, driving is the leading cause of work-related fatalities (NIOSH, 2003). Whatever we can do to make driving safer for our workers, the fewer worker deaths there will be.
8. **Genetic predisposition to diseases and target organs of chemicals:** There is a great saying, “Your genes load the gun—the environment pulls the trigger.” For many of us, the gun is already loaded. We have heart disease, high blood pressure, various cancers, etc. in our gene pool, and so it is even more important for us to avoid environmental factors that are linked to those diseases. Some environmental triggers are the chemicals and other hazardous substances we are exposed to at work and off the job. Chemicals typically “target” certain organs—they cause damage to specific organs. These “target organs” vary between chemicals. Some examples include asbestos, silica and many mineral dusts, which target the lungs and respiratory system. Acetone and other solvents target the brain, central nervous system (CNS), skin and often the mucous membranes (eyes, nose and mouth). MeCl is also linked to the blood system (it metabolizes into COHgb) and the liver (causing cancer). Benzene is also linked to the blood system and causes leukemia. Lead has many target organs, including the brain and CNS, heart, kidneys, liver and reproductive system (making it a “teratogen”). We can educate workers regarding their greater susceptibility to these exposures so they can avoid them both at work and away from it as well.
9. **Stress and its effect on many areas, organs, etc.:** Work-related stress is a common factor in employee surveys and complaints. The effects of stress of the body are many and varied. These include mental health, obesity, the gastrointestinal system, heart, endocrine system, tooth and gum disease and diabetes, to name a few (NIOSH, 1999). Reducing stress (both at home and at work) is an obvious way to reduce health stressors and complaints. Worker complaints about stress are often tied to a lack of control over their work and work load. We can help reduce this work-related stress and can help with home-related stress through employee assistance plans and the like.



10. Home safety and work safety—chemicals, PPE, electrical safety, slips/trips, hierarchy of controls, etc.:

More accidents occur off the job than on the job, and that is just to workers (it does not include non-workers, e.g., children and the elderly or infirmed). These accidents account for 25% more lost time than on the job accidents too (University of Alaska-Fairbanks, 2000). Focusing solely on work-related accidents is getting at less than 50% of the problem and causes. Off-the-job accidents have a significant negative impact on the workplace, including production and profits.

11. Behavior-based safety and lifestyle changes: We are such creatures of habit, and many of us would attest to the cliché “old habits are hard to break.” Whether they are safety-related habits at work (e.g., wearing a respirator) or personal health-related habits (e.g., eating fried foods), they impact our overall health and safety. Interventions at work can just as easily cover personal habits as well.

12. Dispel persistent urban myths, Internet hoaxes, etc.: We all receive e-mails that warn us of some unknown hazard and implore us to forward them immediately to everyone in our address book. If you are in OHS, you receive these from genuinely concerned workers wanting to know if it is true. We spend time usually disproving these urban legends and hoaxes. Of course, we also receive them at home from well-meaning friends. Either way, we can educate others about these persistent e-mail myths by suggesting that the next time they get one, check it out first (before forwarding it) at www.snopes.com or other urban legend sites. Then let us focus on real hazards and health problems.

Certainly, this makes sense in other areas. More studies will continue to demonstrate the overlap between work and home life and the obvious benefits of merging the two together. For now, let us turn to some specific research on integrating wellness interventions with OHS programs.

Let us start by looking at some of the research papers that have been done. Gloria Sorensen research papers include:

- Integrating Occupational Health Safety and Worksite Health Promotion
- Worker Participation in an Integrated Health Promotion/Health Protection Program
- A Model for Worksite Cancer Prevention

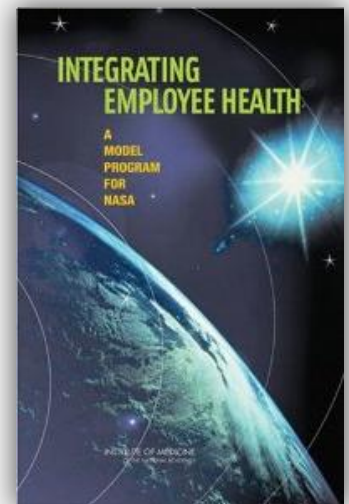
She has also:

- Performed a literature review. She found some evidence of a synergistic effect among U.S. and European companies.
- Performed the Wellworks-2 project, which was funded by the National Cancer Institute and NIOSH. She divided workers into groups that received wellness information. One group received it separately from OHS communications, and the other received it with their OHS materials. The group that received the wellness information integrated with the OHS materials quit smoking at double the rate of the other non-integrated group.
- Authored many papers on the subject in various journals.

The Institute of Medicine (IOM) of the National Academy of Science (NAS) was charged with evaluating NASA’s employee health model. Their research turned into the book *Integrating Employee Health: A Model Program for NASA*.

In 2003, NASA’s Office of the Chief Health and Medical Officer requested that the IOM evaluate NASA’s programs and make suggestions for improvement. The IOM was impressed with NASA’s model of integrating health and wellness throughout the organization (including, but not only, its OHS program). They found NASA to be forward-thinking in pioneering wellness integration in the early 1990s.

NASA uses a Total Employee Health Management model with 11 different areas. One area, Occupational and Environmental Health, includes the following subareas:



- Safety and injury prevention
- Occupational medicine
- Environmental health programs
- Disaster preparedness and acute care

The other 10 areas are:

1. Absence Management
2. Behavioral Health
3. Disease and Case Management
4. Fitness Center
5. Health Advocate
6. Health Plan Design
7. Health Portal
8. Health Risk Assessment
9. Primary Care Centers
10. Wellness Programs

The IOM felt that NASA had a data collection and evaluation norm, which was helpful, and that for successful programs, the approach needed to be employee-centric instead of program-centric. The IOM had four overall findings with suggestions under each.

Finding 1: The occupational health mission statement is intended to meet employee healthcare needs but needs to be aligned with NASA's mission-driven vision.

Finding 2: Data collection, while robust, lacked uniformity and consistency between NASA centers. Communication between NASA headquarters and centers needed strengthening.

Finding 3: The traditional segregated approach to occupational health (and wellness) does not fit NASA's large, decentralized workforce.

Finding 4: NASA needs a more data-driven, effective and coordinated approach to support its mission (Institute of Medicine, 2005).

For programs to succeed, the approach needs to be employee-centric instead of program-centric.

In 2004, NIOSH held the symposium "Steps to a Healthier U.S. Workforce," bringing together wellness and OHS professionals. Then in 2007, NIOSH changed the name (but not the focus) to "Work Life: Protecting and Promoting Worker Health," held a second symposium and have kept this new name for its program on it.

As part of the second symposium, NIOSH created two Centers for Excellence with missions to promote healthier workers. One center is at the University of Massachusetts-Lowell. Its specific focus is to study and to develop health promotion models with ergonomics and mental health as areas of focus. The second center is at the University of Iowa, and its mission is to study the effects of different programs in varying work environments.

NIOSH researchers Jeannie Nigam and Lawrence Murphy studied organizations and research already done and presented a synergistic model in a poster presentation titled "Synergistic Model for Work Organization and Health Promotion." The model encourages integration of worker protection with worksite health promotion (WHP). It found that more than \$1,685 is spent on lost productivity per employee for ill health. They recommended a proactive approach (as opposed to a reactive one) in promoting health and preventing worker illness. They found that integrating WHP with OHS increases visibility of WHP. They also found it important to implement programs and policies in a supportive culture. They listed areas that benefited this synergy, including flex time, a fitness center, management experience and safety (Nygam & Murphy, 2004).

NIOSH researchers Jeannie Nigam, Thomas Ng and Marcus Butts also studied work-related stress and organizational culture. They published a poster presentation titled "Occupational Stress and Organizational Culture as Predictors of Health Behavior." The purpose was to evaluate WHP and organizational culture. They found that to promote WHP effectiveness one must consider the organizational context and factors like work-related stress. They concluded that their research supports the recommendation that with WHP it is important to consider many work organization factors, in particular alcoholism, physical symptoms and depression (Nigam, et al., 2006).

Brookhaven Lab merged wellness with its workers' compensation/claims management and industrial hygiene and safety. Its occupational health clinic is within human resources and is merged with its environmental health and safety (EHS) program. Here are some specific examples:

- Occupational health physicals are offered along with elective ones.
- Preventive health measures are taken (rather than waiting for workers to present with symptoms).
- They benchmarked their return-to-work program.
- They train on safety at home and at work.
- When they do work-related lab work (e.g., blood lead tests), they also perform health screening (e.g., a complete blood count (CBC) and cholesterol) (interview with Michael Thorn, 2007).

Balsam Environmental Consultants was a small consulting company in New Hampshire in the 1980s through early 1990s. It since was bought by larger environmental companies. It employed mostly a young workforce of engineers, geologists, scientists and industrial hygienists (IHs). Work and personal health were treated as one total program. Here are some examples:

- When the employees went for their medical surveillance and physicals for compliance with OSHA's regulation 1910.120 HAZWOPER, the employees also had their CBC and cholesterol, etc. screening done as well as other routine personal (non-work-related) health screening (e.g., various cancer screening tests).
- When they built new offices, they put in showers, a locker room and an open workout space to facilitate employee workouts.
- They encouraged active employees from the president down to office staff—most all were active in some way or another (from aerobics to wind-surfing).
- When they had a tragic accident years later involving an employee exposed to an acid spill during a routine lab packing by a contractor, the employee showers likely saved his life and easily prevented more horrible acid burns (personal work experience and multiple interviews with current employees, 1987-99).

The State of Maine with about 13,500 workers has merged OHS and wellness into a combined program. One person manages it all, but he is very experienced as well as credentialed in both areas. He has committees to help him carry out the functions of the various areas. Only two agencies have someone responsible for their own department's OHS and wellness program. They tend to cover both areas in many projects and have found that they fit well together. While they have not yet measured outcomes, anecdotal evidence appears good for seeing benefits according to the Director of Employee Health and Safety (interviews with Bill McPeck, 2007-08).

Humana, a large insurance company, has merged wellness with OHS. Here is how:

- It combined its ergonomics program with wellness efforts (a common area amongst other companies).
- Its workers complete an online program for both wellness and ergonomics assessments.
- Workers earn points toward their own personalized wellness goals.
- A tutorial allows workers to do a self-evaluation and to make their own adjustments to their workstations. Therefore, no IH needs to do the work and can focus on other IH areas.
- Costs for new equipment have reduced significantly (e.g., chairs, desks, workstations, etc.) (interview with Kevin Byrne, 2007).

DST, Inc. is the largest processor of transaction statements in the U.S. It has about 15,000 employees with 3,000 in manufacturing. It merged EHS with wellness as follows:

- It put EHS and wellness under an MD with expertise in occupational and environmental medicine (OEM), preventive medicine and family practice.
- It built a Physical Center.
- It has seen correlations—a reduction in risk-takers' injuries and unsafe habits.
- It had a steady decline in injuries and WC claims over the last 15 years (interview with Warner Hudson, 2007).

General Mills also merged its wellness and OHS programs as follows:

- OHS and wellness were put under an MD who is Vice President of Health and Safety.
- Occupational health nurses do wellness, ergonomic evaluations, hearing screening, flu shots, exercise advice, nutrition education, etc.
- Themed newsletters on combined worker health are distributed to employees.
- General Mills found that certain injuries and illnesses were "easily predictable" and avoidable (interview with Tim Crimmon, 2007).

IBM has integrated wellness with OHS. Its merged program is occupational health-driven. It has used predictive modeling and data to better evaluate it and has found that many employees were able to drop at least one health risk (in a self-reported survey) (interview with Tom Kinsman, 2007).

Union Pacific Railroad merged its wellness and OHS programs. Here is what it found and experienced:

- Lack of sleep was a significant risk factor for employee health and safety.
- The company required its café vendor to limit saturated and trans fats, etc. The vendor was pleased to be able to do it and loved it. So did the employees, one of whom commented, "I have lost 10 pounds without doing anything (different)!"
- It is the only company to win the C. Everett Koop Award four times (interview with Tom Kinsman, 2007).

PSE+G in New Jersey experienced a significant reduction in injuries and OSHA recordables after using physical therapists (PTs) in its merged OHS and wellness program. The use of PTs is another common example (interview with Tom Kinsman, 2007).

The U.S. Department of Agriculture's (USDA's) Animal and Plant Health Inspection Service (APHIS) integrated its OHS and wellness programs as follows:

- It put wellness, occupational health (OH), and IH all under an MD.
- The position is Chief of Safety, Health and Employee Wellness.
- The Wellness Manager is also the Ergonomics Manager and holds an IH degree.
- The branch has an agency IH who is responsible for WC, drug-free workplace, the employee assistance program (EAP), environmental protection, and occupational health (Thomas Richard Walker, 2007).

An oil and gas company merged its wellness and OHS programs as follows:

- It integrated it using a Health Team Model.
- It combined EAP, disease management, IH, first aid, ergonomics, WC and OH together under one program.
- It conducted a needs and interests assessment received an 80% response.
- It uses a web portal that is interactive and augmented with phone coaching.
- It uses Wellness Ambassadors as advocates for worker wellness.
- It uses a multidisciplinary approach.
- It also integrated EAP and work-life scenarios.
- It put all benefits together under one simplified, master agreement (interview with Martin Law, Kelly, Luttmmer & Associates, 2007).

The Tennessee Valley Authority (TVA) with about 12,000 employees merged its OHS and wellness programs as follows:

- It put it all under Health Services: OH, fit for duty, EAP, WC and wellness (all are part of the Health and Safety Group).
- Wellness staff review and/or shadow work processes then recommend safer/healthier ways of working.
- It uses "one voice" for all areas and benefit from having all of the key players at the same table.
- It targets wellness and safety "repeat offenders" (not employees, but rather the typical problems—sprains and strains). They can then focus on proper lifting, strength, flexibility training, etc.
- It received very positive feedback, both from employees and the management team.
- It conducts "Block Training" all at once with wellness rolled in.
- It has wellness facilities, staff and screening (interview with Scott Tiemeyer, 2007).

Weyerhaeuser successfully merged wellness with OHS and focused on these areas:

- It used a health plan focus: it looked at preventive measures and conducted health risk assessments for employees.
- It used health coaching to focus on disease management.
- H&S messages are combined with health risk relationship information.
- It focused on ergonomics and early intervention and encouraged reporting of non-work pain, soft tissue and chronic pains. It taught self-care, stretching and range of motion exercises to workers.
- It reviewed work processes for H&S improvements.
- It had an onsite fitness center and a reimbursement for offsite ones.
- It focused on smoking cessation and its long-term effects, healing problems (work and non-work), disability issues, etc.
- Wellness includes overall safety and health management for their program (e-mail interview with Denise Souza, 2007).

Worthington Industries merged wellness with OHS and saw significant results. Here is where and how:

- Employees go to the onsite Medical Center and receive a full workup.
- EHS and human resources are under one director.
- From 2001 to 2006, the total number of injuries decreased by ~65%.
- Days Away Restricted or Transferred rate and their WC claims decreased from 1,000 (in 2001) to 358 (in 2006).
- It took 3 to 5 years to see significant changes.
- Smoking decreased from 22% to 15%.
- It saw a 2:1 return on investment (ROI) (Walker, 2008).

Highsmith is a supplier of furniture and equipment mostly to schools and libraries. It integrated wellness into its work culture back in 1989. Here is what Highsmith has done and seen:

- It changed insurers to one with a greater focus on wellness.
- It provides learning opportunities and a flexible schedule for employees.
- It provides annual health and wellness screenings (for both workers and their spouses).
- It subsidizes health insurance if workers do not use tobacco, have wellness screenings and/or get a comprehensive physical.
- Its insurance premiums increased by only 4.6% over the last 5 years (whereas in the U.S., it has gone up by ~60%).



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- Employees with high cholesterol are down by 66%.
- They have enjoyed better profits and production (and they feel it is “the right thing to do”) (Cable, 2007).

American Cast Iron Pipe Company (ACIPCO) merged wellness with OHS as follows:

- In 1993, it started the “Well Body Club” (with levels of 10, 25, 50 and 200—employees who qualify based on health get paid the dollar amount of the levels).
- It created “Teams of 3” for weight management encouragement (they get weighed together).
- It offered the “100-Day Challenge” by paying 100 employees \$100 to quit smoking for 100 days.
- Employees eat lunch with a nutritionist.
- Its ROI is \$2.19 to \$3.50 (and absenteeism) for every \$1 they put in.
- It has an onsite fitness center with strength training, cardiovascular equipment, an aerobics studio, showers and office facilities for physical therapy.
- The fitness center paid for itself in 3 years (Cable, 2007).

Lincoln Industries fully integrated wellness with its work culture starting 16 years ago and has had great successes:

- It provides onsite massages and preshift stretching.
- It requires that employees do quarterly checkups to measure weight, body fat and flexibility.
- It provides annual blood, vision and hearing tests.
- It rates employee fitness and health as platinum, gold, silver and non-metal.
- If employees achieve platinum status, they get a 3-day, paid trip to climb a 14,000’ peak in Colorado. One hundred and three employees qualified, and 70 made the climb.
- Healthcare costs are less than \$4,000/employee; this is half the regional average. The company has saved more than \$2 million.
- WC costs were \$500,000 5 years ago. Now they are less than \$10,000 for the first 6 months of the year (CNN.com, 2008).

To summarize, merging or integrating wellness with OHS not only makes sense in many areas, it also pays off in greater benefits to workers and ROI for the organization. Many companies, organizations and government agencies have found success by taking this merged approach. What more proof does anyone need? ♦

References

- (1987-99). Personal work experience and multiple interviews with current employees.
- (2007, Feb.). E-mail interview with Denise Souza, MSN, NP, COHN-S, Weyerhaeuser.
- (2007, Feb.). Interview with Kevin Byrne, MD, USPS Medical Director.
- (2007, Feb.). Interview with Martin Law, Kelly, Luttmner & Associates regarding anonymous oil and gas company.
- (2007, Feb.). Interview with Michael Thorn, RN, MBA, CWPM, Brookhaven Lab.
- (2007, Feb.). Interview with Scott Tiemeyer, Tennessee Valley Authority.
- (2007, Feb.). Interview with Thomas Richard Walker, MD, USDA APHIS.
- (2007, Feb.). Interview with Tim Crimmon, MD, General Mills.
- (2007, Feb.). Interview with Tom Kinsman of MediFit.
- (2007, Feb.). Interview with Warner Hudson, MD, DST, Inc.
- (2007, Feb.-2008, Sept.). Interviews with Bill McPeck, CWWP, State of Maine, Bureau of Human Resources, Director of Employee Health and Safety.
- Cable, J. (2007, Apr. 1). The road to wellness. *Occupational Hazards* (now *EHS Today*).
- Cancer Causes Control. (2008, Feb.). Physical job activity may cut prostate cancer risk. Retrieved from <http://howtokeephealth.info/?p=3491>.
- DukeHealth.org. (2007, Apr. 23). Obesity increases workers’ compensation costs. Durham, NC: Duke Medicine News and Communications. Retrieved from http://www.dukehealth.org/health_library/news/10044.
- Interview with Douglas Lawson, Ph.D., CIH, former OSHA Compliance Officer Region 1.
- Jain, V.K. (2006). Smoking-related musculoskeletal disorders: A review. *Journal of Orthopaedics*.
- Kort, M. & Baldry, J. (2002). The association between musculoskeletal disorders and obesity. *Australian Health Review*, 25(6), 207-14.

Martin, D.S. (2008, Jul. 25). 'Wellness' a healthy investment for company. CNN.com. Retrieved from <http://www.cnn.com/2008/HEALTH/diet.fitness/07/25/fn.healthy.company/index.html>.

National Academy of Sciences. (2005, June). Institute of Medicine report brief: Integrating employee health—A model program for NASA.

National Cancer Institute. (2004, Mar. 16). Obesity and cancer: Questions and answers. Bethesda, MD: Author. Retrieved from <http://www.cancer.gov/cancertopics/factsheet/Risk/obesity>.

Nigam, J., Ng, T. & Butts, M. (2006). Occupational stress and organizational culture as predictors of health behavior. Atlanta, GA: NIOSH.

NIOSH. (1997, Jul.). Musculoskeletal disorders and workplace factors: A critical review of epidemiologic evidence for work-related musculoskeletal disorders of the neck, upper extremity and low back. Publication No. 97-141. Atlanta, GA: Author. Retrieved from <http://www.cdc.gov/niosh/docs/97-141/>.

NIOSH. (1999). STRESS...at work. Publication No. 99-101. Atlanta, GA: Author. Retrieved from <http://www.cdc.gov/niosh/docs/99-101/>.

NIOSH. (2003, Sept.). Work-related roadway crashes: Challenges and opportunities for prevention. Publication No. 2003-119. Atlanta, GA: Author. Retrieved from <http://www.cdc.gov/niosh/docs/2003-119/>.

Nordenberg, D., Yip, R. & Binki, N.J. (1990, Sept. 26). The effect of cigarette smoking on hemoglobin levels and anemia screening. *Journal of the American Medical Association*, 264(12).

Nygam, J. & Murphy T. (2004). Synergistic model for work organization and health promotion. NIOSH Symposium on Steps to a Healthier Workplace.

University of Alaska-Fairbanks. (2000). Safety sentinel. Fairbanks, AK: Author.

Walker, L. (2008, Apr. 1). Worthington puts wellness to work. *Occupational Hazards* (now *EHS Today*).

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