

NIOSH Response to Summarized Stakeholders' Comments

NIOSH National Total Worker Health^{®1} Agenda

April 2016

1.0 Background

The NIOSH National Total Worker Health[®] Agenda (Agenda) was developed to stimulate innovative research, practical applications, policy guidance, and capacity-building to improve workplace practices as they relate to Total Worker Health (TWH). TWH is defined as policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts to advance worker well-being.

The intended audience for the Agenda includes researchers, occupational safety and health practitioners, health promotion professionals, workers, employers, labor organizations, health care providers, educators, policymakers, and others with a vested interest in the safety and health of workers. The document provides this audience with priority goals to prevent worker injury and illness and to advance the safety, health, and well-being of the workforce.

2.0 Description of Stakeholder Review

On September 23, 2014, NIOSH announced in the Federal Register [79 Fed. Reg. No. 184 (2014); 56804-56805] the availability of the draft Agenda (Proposed National TWH Agenda) for stakeholder review. Stakeholders were invited to provide input on the top priority issues to include in the Agenda. Input could be sent by mail, through www.regulations.gov, and/or in person at one of three conference town-hall sessions during two scientific meetings, held October 6-10, 2014: The 1st International Symposium to Advance Total Worker Health and The Healthier Federal Workers Conference. During the 90-day review period that closed on December 22, 2014, 42 submissions (18 oral, 24 written) from stakeholders were received by the NIOSH Docket Office for the Agenda, NIOSH Docket #275. The names and affiliations of the stakeholder reviewers are listed here.

These individuals commented on behalf of their organizations:

1. Dr. Cristina Banks, Interdisciplinary Center for Healthy Workplaces, University of California, Berkeley
2. Mr. Gary Bolden, Office of Medical Services, U.S. Department of State
3. Dr. Manuel Cifuentes, Center for the Promotion of Health in the New England Workplace, University of Massachusetts–Lowell (University of Massachusetts Medical School)
4. Ms. Patricia Ennis, American Society of Safety Engineers
5. Dr. Pouran Faghri, Center for the Promotion of Health in the New England Workplace, University of Connecticut
6. Ms. Blair Ford, Society for Industrial and Organizational Psychology
7. Mr. James S. Frederick, United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied-Industrial and Service Workers International Union
8. Dr. Brian Gifford, Integrated Benefits Institute
9. Mr. Dave Heidorn, American Society of Safety Engineers
10. Dr. Robert Henning, Center for the Promotion of Health in the New England Workplace, University of Connecticut
11. Ms. Deborah A. P. Hersman, National Safety Council
12. Mr. Kenneth Martin, School of Engineering, University of Alabama–Birmingham
13. Dr. Robert McLellan, American College of Occupational and Environmental Medicine

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14. Dr. James Merchant, University of Iowa Healthier Workforce Center of Excellence (retired)
15. Ms. Luann Miller, St. Genevieve County Memorial Hospital
16. Dr. Kathryn Mueller, American College of Occupational and Environmental Medicine
17. Dr. Michael O'Donnell, Health Management Research Center, University of Michigan
18. Dr. Laura Punnett, Center for the Promotion of Health in the New England Workplace, University of Massachusetts–Lowell
19. Ms. Rebecca Reindel, American Federation of Labor and Congress of Industrial Organizations
20. Mr. Daryl Risinger, Concentra Healthcare
21. Dr. Diane Rohlman, University of Iowa Healthier Workforce Center of Excellence
22. Dr. Derek Shendell, New Jersey Safe Schools Program and New Jersey OSHA Alliance for Young Worker Safety and Health
23. Dr. Glorian Sorensen, Center for Work, Health, & Well-being, Harvard T. H. Chan School of Public Health
24. Ms. Lizabeth Taghavi, National Workplace Safety, Kaiser Permanente
25. Ms. Lili Tenney, Center for Worker Health and Environment, Colorado School of Public Health
26. Dr. Cecilia Watkins, Western Kentucky University

These individuals did not comment on behalf of their organizations:

1. Dr. Anna Allen, West Virginia University School of Medicine
2. Dr. Sin Eng Chia, Saw Swee Hock School of Public Health, National University of Singapore
3. Ms. Barbara Fahmy, Colorado Division of Workers' Compensation, Colorado Department of Labor and Employment
4. Ms. Jane Jacobs, National Cancer Institute
5. Ms. Maureen Johnson, IBM

These individuals did not provide affiliations:

1. Mr. Larry Bloomfield
2. Ms. Allison Heller-Ono
3. Mr. Timothy Hwang
4. Mr. Peter Langes
5. Ms. Gretchen Petery
6. Mr. Larry Poague
7. Dr. Mark Wilson

Four individuals commented anonymously.

3.0 Summary of Comments Received

Of the 42 comments received, the vast majority were supportive of the Agenda and offered a number of useful suggestions and recommendations. These helped shape the conceptualization and scope of the TWH concept as well as the Agenda, especially the goals. Although all comments were reviewed and considered, some did not translate into modifications to the Agenda because they had already been addressed within the proposed Agenda (and were kept) or they were beyond the scope of the Agenda.

All comments submitted by stakeholders were synthesized to provide a collective response to similar topics. The topics were grouped into one of the following categories:

1. Definition of Total Worker Health and Fit with NIOSH's Mission

2. Research Goals
3. Practice Goals
4. Policy Goals
5. Capacity-Building Goals
6. Economics and Business Case
7. At-risk Working Populations

4.0 Category Summary and NIOSH Response

Category 1 – Definition of Total Worker Health and Fit with NIOSH’s Mission

Stakeholders’ Comments regarding the “field” of TWH: A couple of stakeholders expressed concerns about the Agenda in general and the concept and “field” of TWH. They believed that the TWH paradigm is seriously flawed and that integrating systematic occupational safety and health programs with health promotion programs that focus on the individual worker is “dangerous.” They suggested that the definition of TWH should focus on “safer–healthier–workforces” rather than “safer–healthier–people.”

NIOSH Response: NIOSH welcomes the opportunity to clarify further what TWH is and is not and to highlight its vast potential to impact worker safety, health, and well-being.

NIOSH acknowledges that the TWH paradigm is evolving along with the scientific evidence for this approach. However, overall, the concept of TWH is to:

- Protect workers by designing and implementing safer, healthier work and workplaces; and
- Encourage evidence-based policies, programs, and practices that promote health and prevent disease, both on and off the job, to advance worker well-being.

Workplace health programs that do not address the health effects of unsafe or unhealthy work are not consistent with the TWH paradigm. Those that do not use evidence-based interventions are not consistent with TWH interventions. Those whose primary focus is cost-savings over improved worker safety, health, and well-being are not indicative of TWH programs.

NIOSH believes that protecting and improving the health of workers requires a focus on safer, healthier workplaces. The role of work design and work organization in contributing to adverse health in working populations is also a vital consideration. NIOSH believes that incentives presented by the TWH concept can promote research into how new patterns of employment and emerging types of work restructuring affect overall worker safety, health, and well-being. A TWH perspective recognizes that the link between illness/injury and new patterns of work organization and nonstandard employment arrangements is an important “occupational exposure” that needs investigation. Reducing and eliminating risks to worker safety, health, and well-being that arise from such new exposures are an important focus of TWH. At the same time, NIOSH recognizes that “non-occupational exposures” and “occupational exposures” can act together to produce worker illness and injury.

By integrating NIOSH’s traditional focus on factors exclusive to work and attention on health conditions to which work may be a contributor, TWH seeks to enlarge the contribution that NIOSH can make to ensure worker safety, health, and well-being.

The Agenda is thus a necessary platform to galvanize stakeholders to advance the TWH “field” and help make our Nation’s workplaces safer and the workers within them healthier. The Agenda introduction has further stressed these points.

Stakeholders’ Comments regarding TWH’s role and fit within NIOSH: A couple of stakeholders suggested that the TWH program itself—and thus the Agenda—is outside the scope of authority given to NIOSH by the Occupational Safety and Health Act of 1970.

NIOSH Response: Illnesses and injuries experienced by working people represent those primarily caused by factors in the workplace and those in which work contributes significantly, but only as one of a number of causes. Evidence supporting the role of diverse risk factors in illness and injury causation is frequently not used in an integrated way to prevent worker illness, injury, and disability [Schulte et al., 2014]. By integrating NIOSH’s traditional focus on factors exclusive to work with attention to health conditions, in which work may be a contributor or cause, TWH seeks to expand our understanding of health (<http://www.who.int/about/definition/en/print.html>) and to enlarge the contribution that NIOSH can make to overall worker safety, health, and well-being.

NIOSH seeks to expand research on factors exclusive to work with attention to work that contributes to health conditions. In addition, “by developing innovative methods, techniques, and approaches” (29 U.S.C. Section 651(b)(5)), it seeks to fulfill the purpose of the Occupational Safety and Health Act of 1970 “to assure as far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources...” (29 U.S.C. Section 651(b)).

As a part of the Centers for Disease Control and Prevention (CDC) in the U.S. Department of Health and Human Services (HHS), NIOSH is also mindful that the integration of occupational safety and health protection with efforts to improve the overall health of American workers by preventing all-cause injury and illness amplifies the efforts of CDC and HHS to promote *Healthy People 2020* (<http://www.healthypeople.gov/>).

Schulte et al. [2012]. Am J Public Health 102:434–448.

Stakeholders’ Comments regarding NIOSH’s funding of TWH: Stakeholders stressed that too much of NIOSH’s limited resources have already been directed toward TWH, including funding the Centers of Excellence, whose research they believe is “purposeless, ill-defined, and inconclusive.”

NIOSH Response: NIOSH shares the concern about the suitable use of scarce appropriated dollars, but it believes TWH represents a positive return on knowledge generation, given the resources invested. The substantial majority of the TWH investment is extramural and supports innovative research. The Centers of Excellence for TWH are cooperative agreements with the extramural research community to conduct transdisciplinary research, intervention, outreach and education, and evaluation activities related to TWH goals. The Centers play an important role in that they have close relationships with worker populations that can serve as “field laboratories” to elucidate how the new patterns of employment and emerging types of work restructuring affect worker safety, health, and well-being. On October 1, 2015, NIOSH published a Funding Opportunity Announcement (FOA) to support new Centers of Excellence for TWH. The FOA emphasizes specific areas of particular interest to NIOSH’s enhanced perspectives on TWH, such as new employment patterns and evolving performance management approaches that negatively impact worker health. The Agenda introductory comments further stress these points.

Stakeholders’ Comments regarding the relationship between TWH and wellness programs: Stakeholders cautioned that current wellness programs focus on individual health-related behaviors and that such approaches effectively “blame the worker” for health-related choices, coerce workers into participation, and disproportionately impact lower-income workers.

NIOSH Response: NIOSH agrees that some current “wellness” programs lack scientific support, focus solely or heavily on individual behavior change appraised almost exclusively by biometric data, can be punitive and discriminatory, and/or are designed with short-term economic savings for the employer as the primary goal. Some place far too much emphasis on individually focused behavior change and fail to

address the nature, risks, and challenges of work itself on worker health. NIOSH considers typical “wellness” programs to be inadequate because they ignore the contribution of work on health and, as the commenters suggest, focus largely on medical cost savings. NIOSH agrees that integrating these types of “wellness” programs with occupational safety and health protection programs does not ensure the types of worker health interventions TWH seeks to promote. A program that considers the workplace as just a platform (as opposed to being a risk factor itself) to improve employee health can be successful only if it makes the health of the worker, *as a worker*, the centerpiece of its efforts.

The NIOSH goal is to integrate high-value safety and high-value health programming in a holistic, efficient way. We believe NIOSH plays a unique role and has a sentinel voice in shining a light on the shortcomings of these wellness-program-only approaches while simultaneously championing their value in a more integrated, worker-centered approach to health interventions.

NIOSH believes TWH is the example to follow, not a “wellness” program. The TWH Program has never advocated or advanced unproven, coercive, disrespectful, or punitive interventions. *The NIOSH Essential Elements of Effective Workplace Health Programs and Policies for Improving Worker Health and Well-Being* (<http://www.cdc.gov/niosh/TWH/essentials.html>), a document developed with labor and management input, still serves as the central core of recommendations that guide the TWH program.

NIOSH reiterates its commitment to the position that it is the primary responsibility of employers to create safe, healthful working conditions for all of its workers. First-dollar investment must be directed toward safer work that does not endanger workers.

For employers who are meeting and exceeding industry safety standards in their industry, additional gains in injury and illness prevention hinge upon using a broader, holistic view of worker safety, health, and well-being. By not doing so, we rob workers of access to high-quality, evidence-based programs and we leave the program environment to traditional employee wellness practitioners who do not consider the nature and hazards of work in their program design or implementation.

Stakeholders’ Comments regarding TWH and reducing healthcare costs: Commenters also suggested that helping employers to reduce their healthcare costs—which (they observed) seems to be the growing focus of TWH programs—is not a role for NIOSH.

NIOSH Response: Although we agree that helping employers to reduce their healthcare costs should not be the top priority of the TWH Program, the fast-rising healthcare costs facing workers themselves cannot be ignored. Increasingly, workers face higher out-of-pocket expenses related to health and will benefit from reduced healthcare costs through better health, better existing disease management, and earlier recognition and treatment of new disease. Although we see value in reducing the healthcare costs borne by both individual workers and organizations, no currently funded TWH research has the primary focus of reducing healthcare costs. Even though many typical worksite wellness programs advance this as a significant goal, it is not the primary research priority within TWH-funded projects. The introduction to the Agenda further stresses these points.

Stakeholders’ Comments regarding the specificity of the Agenda: Stakeholders believed that the Proposed TWH Agenda was too generic and needed to be more strategic and aligned with traditional National Occupational Research Agenda (NORA) goals that have clear outcomes based on sound evidence. They believed that without significant changes, the Agenda risked creating “a dangerous research pathway.” Commenters stated that there are important activities that employers *could* be doing to support workers’ safety, health, and well-being that remain largely absent from NIOSH’s Proposed TWH Agenda.

NIOSH Response: NIOSH agrees that specific goals and project objectives are vital to ensure that TWH efforts have a strongly positive impact on workforce safety, health, and well-being. We initially

focused on high-level overall strategic goals in the proposed Agenda because we wanted to elicit feedback on these before developing more specific intermediate goals, activities, and outputs. The feedback that we received on the draft Agenda was used to add specific metrics to the Agenda. The final Agenda includes more specific goals, objectives, and metrics beyond the high-level strategic goals that were presented previously. NIOSH recognizes that new technologies, new working conditions, and new emerging forms of employment may present new risks to worker health, that understanding and reducing those risks are an important focus of TWH, and that this focus should be reflected in the Agenda. Also, this more detailed Agenda is fully aligned with the second decade of the NORA public-private partnership and the third NORA decade (2016—2026), which is in the final stages of preparation.

Category 2 – Research Goals

Stakeholders’ Comments about the TWH evidence base: Stakeholders suggested adding additional evidence-based references but also raised concerns about the amount of current evidence regarding the effectiveness of TWH, as well as the definition and quantification of integration. They questioned whether there is sufficient understanding of the advantages and disadvantages of integrated workplace health protection and health promotion programs in comparison to interventions that were not integrated, and they asked for more study of outcomes in relation to specific program elements that are integrated. Criteria were suggested for considering program impact, such as cost-effectiveness in program development and delivery, success in engaging workers, improvements in health conditions and behaviors, and organizational outcomes such as medical costs, productivity, and organizational health culture. They also noted that little research attention has been given to occupational injury outcomes in relation to integrated interventions, and spillover of integrated interventions to prevention of non-occupational injury was mentioned as a fertile area for research. Stakeholders also wondered how the Agenda can make an impact.

NIOSH Response: NIOSH agrees with the stakeholder comments regarding the need for specificity and more evidence while also recognizing that the research base on integrated interventions is still growing. Much remains to be learned about the pros and cons of integrated interventions relative to more fragmented workplace health programs. Systematic study of outcomes in relation to types of program elements that are combined is not evident. To that end, NIOSH co-sponsored a Pathways to Prevention workshop in late 2015 with the National Institutes of Health (NIH) Office of Disease Prevention and the National Heart, Lung, and Blood Institute to focus on identifying and evaluating the TWH evidence base. NIOSH agrees with stakeholder concerns and implications that further investigation needs to be directed toward learning the effects of program integration, effects on workplace injury and additional outcomes and spillover effects beyond the workplace, and effects in relation to the types of program elements integrated. The revised Agenda goals address these needs, including criteria for effectiveness. Intervention research goals in the Agenda have been expanded to acknowledge these research needs. NIOSH believes that the Agenda can lead to improvement in worker safety, health, and well-being by encouraging more research and policies on how to implement effective interventions and strengthen capacities. Because this is a *National* Agenda, all stakeholders, across all disciplines, have a role in its successful implementation.

Stakeholders’ Comments regarding theory: Stakeholders expressed the need for greater attention to the theories and mechanisms in studies of workplace health interventions.

NIOSH Response: NIOSH acknowledges the importance of theory-driven research and the need for greater explication of theory and causal mechanisms in studies of TWH interventions (Strategic Goal 1, Research). The recent review of TWH interventions by Anger and colleagues [2015] revealed that most study reports lacked discussion of the theory and mechanisms underlying the effects of these

interventions. Understanding the theoretical rationale and mechanisms or processes underlying an intervention effect is needed to generalize the intervention to other situations (that is, to understand why or under what circumstances the intervention should work or not). Therefore, having such an understanding is crucial to the advancement of knowledge on TWH interventions and to practical application of findings from intervention studies. This has been addressed in the Research goal section of the Agenda.

Anger KW, Elliot DL, Bodner T, Olson R, Rohlman DS, Truxillo DM, Kuehl KS, Hammer LB, Montgomery D [2015]. Effectiveness of total worker health interventions. *J Occup Health Psych* 20:226–247.

Stakeholders’ Comments regarding return-to-work research: Stakeholders asked that the Agenda give further attention to the quality of care for injured workers and their reintegration in the workplace.

NIOSH Response: NIOSH acknowledges that the TWH literature shows scant attention to disability management, and it agrees that restorative interventions represent a critical element in the TWH framework. To this end, NIOSH has recently established an intramural Center for Worker Compensation Studies (<http://www.cdc.gov/niosh/topics/workercomp/cwcs/>). It works in partnership with the NIOSH TWH program to investigate comprehensive interventions to reduce injury risk, prevent disability from work-related illness and injury, and improve upon disability management and return-to-work practices. The Agenda encourages stakeholders to conduct research addressing broad integration of organizational prevention activities with occupational safety and health programs, including, for example, benefit programs and employee assistance programs. This element of the strategy has been amended to specifically acknowledge disability management as a key element in the TWH prevention model, as found in the following goal:

“Activity/Output Goal 1.2.6: Investigate the effects of broader integration of workplace prevention activities (i.e., benefit programs and policies, Employee Assistance Programs, disability management), together with occupational safety and health activities.”

Stakeholders’ Comments about lost-time data research: Stakeholders suggested that NIOSH work with the Bureau of Labor Statistics (BLS) to investigate lost-time data as a barometer of worker health. Stakeholders also observed that comorbid conditions are common among worker compensation claimants, which diminish the value of narrowly focused intervention strategies.

NIOSH Response: The true indicators of severity and costs include much more than the injuries and illnesses that BLS reports. There is a large literature on the BLS’s undercounting of injury and illness. NIOSH agrees that BLS lost-time data reflect health risk in worker populations, and NIOSH liberally employs these data in studies of occupational illness and injury. There is also a growing body of research showing comorbid conditions among injured workers, which suggests a multifactorial etiology for these outcomes. The Agenda supports the value of comprehensive interventions that target both work-related risks for injury and associated comorbid conditions. BLS is a useful starting point to assess severity and costs, and the use of other sources is valuable to address undercounting of injury and illness.

Stakeholders’ Comments regarding built environment research: Stakeholders commented that analysis of the built environment could serve to better inform health practitioners on the design of TWH interventions.

NIOSH Response: The relationship between health behavior and the built environment has been the subject of substantial investigation in the health promotion field. NIOSH agrees with the need to incorporate knowledge on this topic in occupational safety and health research and comprehensive training programs in TWH that span the fields of health promotion and occupational safety and health.

The Agenda has been amended to include focus on the built environment (see Built Environment Supports in Figure 1).

Stakeholders' Comments regarding wage research: Stakeholders asked about the influence of wages on the health and well-being of employees.

NIOSH Response: There are many publications that address the effect of wages on health; however, studies often use socioeconomic status (SES) rather than wages, so there is confounding attributed to education and occupation. NIOSH has sponsored research on this, including that by Leigh and Du [2012] and Minkler et al. [2014]. Research suggests that low-wage and low-SES workers tend to be at greater risk of injury and illness at work, in part because they may be employed in more hazardous occupations and in occupations where organizational benefits and programs that support worker safety and health are unavailable. For this reason the Agenda advocates the integration of occupational safety and health content into community and public health activities, which may represent the only access to health services and safety resources for low-wage workers, as shown in the following activity/output goal:

“Activity/Output Goal 1.2.6: Investigate the effects of broader integration of community and public health prevention activities together with workplace prevention activities.”

Leigh JP, Du J [2012]. Are low wages risk factors for hypertension? Eur J Public Health 22(6):854–859.

Minkler M, Salvatore AL, Chang C, Gaydos M, Liu SS, Lee PT, Tom A, Bhatia R, Krause N [2014]. Wage theft as a neglected public health problem: an overview and case study from San Francisco's Chinatown District. Am J Public Health 104(6):1010–1020.

Stakeholders' Comments regarding multidisciplinary research: Stakeholders asked for a more multidisciplinary approach to workplace health practice and research. They commented that workplace health programs tend to focus on activities and factors that are external to the work context and that recognition needs to be given both to these conditions and to aspects of work itself that influence the health of workers. Furthermore, interventions targeting aspects of work itself should be broadly focused, targeting not just human error but also physical risk factors such as equipment design and socio-technical factors such as the organization of work.

NIOSH Response: The Agenda lists Research goals that urge stakeholders to take a multidisciplinary and transdisciplinary approach. NIOSH agrees that workplace health programs are commonly dominated by health promotion activities that focus on worker lifestyle factors, health behaviors, and health conditions (some of which may be unrelated to work and to the neglect of root causes in the workplace). Although not discounting the importance of health promotion activities, NIOSH argues for a primary emphasis on work-related risk factors for illness and injury and for organizations to provide integrated packages of interventions that address both occupational and non-occupational risk factors in a coordinated way. This is a core tenet for TWH research and practice that is articulated in the introduction to the Agenda and in *The Research Compendium: The NIOSH Total Worker Health™ Program: Seminal Research Papers 2012* (<http://www.cdc.gov/niosh/docs/2012-146>). These papers show examples of TWH studies that combine educational and motivational interventions to support safe and healthy behaviors, both within and outside of the workplace, with workplace structural interventions encompassing both physical and psychosocial factors to reduce hazardous exposures.

Stakeholders' Comments regarding organizational culture research: Stakeholders commented on the need for health research on organizational culture and for a better understanding of facilitators and barriers to creating an organizational culture of TWH.

NIOSH Response: A strong culture of health is generally understood to be essential to the success of organizational health programs, including TWH programs. Approaches to creating an organizational culture of health is reflected in the Harvard School of Public Health SafeWell Practice Guidelines (http://centerforworkhealth.sph.harvard.edu/sites/default/files/safewell_guidelines/SafeWellPracticeGuidelines_Complete.pdf). However, in contrast to understanding safety culture in organizations, research and knowledge pertaining to organizational health culture as a predeterminant of worker health are sparse. NIOSH agrees with stakeholder concerns that further research is needed to understand the construct of organizational culture of health, similar to the research investment in safety culture. Researchers must demonstrate how such a culture is achieved and assessed, its effects on worker health, and its mediating effects (such as those of pro-health interventions in the workplace). The Agenda has been amended to highlight this need, as reflected in the following goal:

“Activity/Output Goal 1.1.4: Complete studies to understand the construct of organizational commitment to safety, health, and well-being – how it is achieved and assessed, effects on worker health and mediating effects (e.g., pro-health interventions in the workplace).”

Stakeholders’ Comments regarding surveillance research: Stakeholders commented that many of the surveillance research goals would be better classified as practice goals.

NIOSH Response: NIOSH acknowledges that all of the goals listed as surveillance research goals have relevance to practice, because information obtained as the result of improved TWH surveillance activities would serve to steer workplace policies and practices. The same is true for the intervention research goals; organizational policies and practice follow from the products of intervention research. However, as with the intervention research goals, all of the surveillance goals refer to actual research and development activities, and we believe these are most appropriately classified as research goals for the purposes of this Agenda.

Stakeholders’ Comments regarding occupational safety and health management systems: Stakeholders commented on the need for a better understanding of how best to integrate wellness activities into occupational safety and health management systems.

NIOSH Response: Information and tools to guide the development of integrated practices are presently available from multiple sources, including the NIOSH Centers of Excellence for TWH, the Institute of Medicine, and the State of California. Access to this material is available through the NIOSH TWH website (<http://www.cdc.gov/niosh/twh/reports.html>). Further information on specific corporate approaches to integrated programs is also found on the NIOSH website (<http://www.cdc.gov/niosh/TWH/practices.html>) and in *The Research Compendium: The NIOSH Total Worker Health™ Program: Seminal Research Papers 2012* (<http://www.cdc.gov/niosh/docs/2012-146/>). More recently, the Institute of Medicine released a report on promising practices and barriers in TWH programs (<http://www.iom.edu/reports/2014/promising-and-best-practices-in-total-worker-health.aspx>). The NIH Pathways to Prevention Workshop’s independent panel will also publish a report in 2016 outlining research gaps and future research priorities (<https://prevention.nih.gov/programs-events/pathways-to-prevention/workshops/total-worker-health>).

As interest in TWH multiplies, additional measures will be needed to increase TWH skill sets and guide the adoption of integrated intervention in organizations. The Agenda’s goals have been modified to address the need for better understanding of integration with occupational safety and health management systems, as indicated in the following goals:

“Activity/Output Goal 1.2.1: Assess how to integrate well-being promotion activities with occupational safety and health management systems most effectively.”

Activity/Output Goal 1.2.2: Evaluate how management practices, including work organization and job design and communication and decision making practices, influence worker safety and health outcomes (to include work-life/work-family outcomes) and point to opportunities for prevention.”

Stakeholders’ Comments about the hierarchy of controls: Stakeholders asked about alignment between TWH interventions and the hierarchy of controls.

NIOSH Response: The hierarchy of controls identifies and prioritizes levels of workplace safety and health intervention, from elimination of workplace hazards to engineering and administrative interventions that serve to isolate workers from workplace hazards. Although a combination of these measures is commonly employed in the workplace, integration of these measures with other policies, programs, and practices that affect worker health is absent in the traditional hierarchy of controls framework. Research in TWH illustrates interdependency between classic occupational safety and health interventions (characterized by the hierarchy of controls) and health promotion efforts in terms of intermediate health outcomes such as health behaviors (*The Research Compendium: The NIOSH Total Worker Health™ Program: Seminal Research Papers 2012*, <http://www.cdc.gov/niosh/docs/2012-146/>; Anger et al., 2015). For this reason, NIOSH agrees that we should illustrate how TWH activities should also be prioritized along an analogous hierarchy. The Agenda has been amended to reflect this viewpoint in the following goal:

“Activity/Output Goal 1.2.6: Investigate the effects of broader integration of hierarchy of controls with other workplace health interventions.”

Stakeholders’ Comments regarding financial incentives for wellness: Stakeholders commented that the research goal of investigating organizational policies and practices that support or detract from the development and conduct of integrated interventions should include investigating the influence of policies and practices that permit financial incentives for worker participation in wellness activities.

NIOSH Response: As discussed in the Agenda introduction, the Agenda is concerned with understanding the merits of integrated interventions and promoting the design and uptake of effective, integrated worksite safety and health interventions. Because the use of financial incentives to influence participation in workplace health programs is widespread and is controversial in some settings, we believe there is substantial value in investigating both the positive and negative impacts of such programs.

Category 3 – Practice Goals

Stakeholders’ Comments regarding feasibility: Stakeholders emphasized that practice should be based on the best available evidence. Stakeholders also recommended that the Agenda address the feasibility of integration, because multifactorial characteristics of effective interventions (that is, proof under real-world conditions) need to be identified and studied in order for TWH to have impact. For example, stakeholders recommended that NIOSH study the beliefs and attitudes of target audience members; understand how to overcome barriers to implementation; develop interventions that are built into organizational infrastructure, technology, and management systems; and create scalable and transferable interventions to address the diverse workplace safety and health needs for a multitude of organizations at different stages of development.

NIOSH Response: NIOSH agrees that practice should be based on sound TWH research that promotes comprehensive changes for workers’ well-being in controlled and pilot settings, as indicated by the following goal:

“Intermediate Goal 2.1: Apply TWH best practices developed from evidence-based research and consensus statements that promote worker safety, health, and well-being.”

NIOSH also agrees with the stakeholder comments that there is a need to emphasize the feasibility of integration. NIOSH recognizes that TWH is not a one-size-fits-all approach and that for TWH to be successfully adopted in practice, the merits of integrated interventions must be researched further. To advance this effort we have created the following goal:

“Activity/Output Goal 2.1.1: Determine effective practices leading to successful integration of worker safety and health protection with activities that advance the overall well-being (inclusive of work-life and work-family) of diverse worker populations in the full spectrum of work sectors.”

NIOSH recognizes the value of interventions that are built into elements of organizational infrastructures and into technology and management systems, as shown in the following goal:

“Activity/Output Goal 2.1.2: Translate new research findings and concepts to applications, practices, or technologies that can be utilized and evaluated in a variety of work settings.”

However, NIOSH is also sensitive to the need to protect worker privacy and to comply with health information protection laws and emphasizes this need to employers wanting to implement TWH programs.

As a result of the previously expressed comments, the Agenda now includes emphasis on translational research. Such research, as defined by NIOSH, discovers strategies to translate findings and theoretical knowledge into real-world applications, practices, or technologies in the workplace. Translational research can include determining effective practices and policies, leading to successful integration of health protection with activities that advance the overall well-being of workers in diverse settings, and examining organizational-level or individual-level determinants of implementation of TWH.

Stakeholders’ Comments regarding dissemination of best practices: Stakeholders expressed the need to translate scientific evidence on TWH into ready-to-use tools and resources for practitioners and encouraged NIOSH to focus on the practice goals. Stakeholders encouraged the Agenda to have more emphasis on communication strategies, resources, and tools that facilitate organizational and worker buy-in for TWH.

NIOSH Response: NIOSH agrees with the stakeholder comments related to the critical need to increase access to and adoption of the latest evidence and practice on worker safety and health. NIOSH recognizes the need for multifaceted strategies that transfer research findings that are readily accessible and express information in plain language. These best practices need to address the broad range of issues relevant to TWH faced by all organizations. To foster the creation of best practices for TWH, the following activity/output goals have been delineated:

“Activity/Output Goal 2.1.4: Develop toolkits, guidelines, assessments, and other resources that address both health protection and worker well-being for practitioner use.

Activity/Output Goal 2.2.2: Develop an internet-based, open source system for disseminating TWH best practices, recommendations, tool kits, mobile apps, and model programs.”

NIOSH also agrees there is a need for credible, science-based resources to aid safety and health professionals in convincing employers, decision makers, and workers of the importance of TWH. The Agenda emphasizes this need for practical guidance and the importance of evidence-based communication for TWH under Strategic Goal 2. Regarding how best practices could be collected and disseminated, NIOSH agrees that an open source tool would be useful and has articulated that in the Agenda (see goals 2.1.4 and 2.2.2 above). One of the aims of the Agenda is to address these needs and move the Nation closer to development of such evidence and tools. Stakeholder ownership of the activities of the Agenda is critical to addressing these needs.

Stakeholders' Comments regarding management support: Related specifically to organizational culture, stakeholders cited the importance of engagement of supervisors and middle managers; clear communication between supervisors and employees; and the potential for competition between organizations and/or supervisors to be a driving force in facilitating uptake of a TWH approach. Lack of leadership enthusiasm, lack of a clear TWH vision, and lack of forward thinking were cited as potential barriers to adoption of TWH programs.

NIOSH Response: NIOSH agrees with the stakeholder comments that management support is a crucial piece that merits additional emphasis. NIOSH has added additional language to Practice Goal 2, in accordance with the suggestion that emphasizes this importance:

“Activity/Output Goal 2.1.5: Establish mechanisms for TWH-implementation-related communications and partnership-building, fostering management buy-in, and communication between management and workers.”

Furthermore, NIOSH has added Research goals to address these comments:

“Activity/Output Goal 1.2.4: Evaluate the impact of supervisors, middle managers, and upper leadership in the success of TWH programs.”

Activity/Output Goal 1.4.2: Evaluate whether/how healthy, non-punitive competition between workplaces can help foster uptake of TWH programs.”

Stakeholders' Comments regarding evaluation of impact: Stakeholders emphasized the importance of measuring and monitoring outcomes of organizations that have TWH programs. Stakeholders also suggested using a national survey as a data source for evaluating the impact of the Agenda's Practice goals.

NIOSH Response: NIOSH agrees there is a critical need to assess and understand the prevalence of integrated approaches in practice. A national survey or other ongoing surveillance at the workplace level could assist in identifying how work and non-work conditions interact; determine the magnitude of work-related injuries and illnesses; identify workers at greatest risk; establish prevention priorities; and help monitor long-term progress of TWH approaches being implemented nationwide. Such a system has already been identified in the Agenda as a priority, as shown here:

“Activity/Output Goal 2.1.8: Conduct a national survey to assess the adoption of TWH practices and use results to refine dissemination, implementation, and promotion activities.”

NIOSH agrees that specific organizations that have committed to pursuing a TWH approach in their own work setting could be tracked to facilitate lessons learned for future cohorts. This is the basis of the following goal:

“Activity/Output Goal 2.1.7: Conduct studies to evaluate the effects of TWH best practices implementation among organizations.”

The Agenda lists surveillance as a priority, with the aim of measuring and monitoring outcomes.

Stakeholders' Comments regarding the role of healthcare providers: Stakeholders emphasized the need to foster connections between existing communities and disciplines that may have a specific area of expertise related to TWH. Specifically, they mentioned a need to provide practical guidance for bridging of health protection activities with those of health promotion; specify a role for traditional health care within the practice goals; and explore how TWH concepts could be more rapidly promoted through general healthcare and workers' compensation systems. One stakeholder expressed the need to change the language in one of the sub-goals to include “trade associations, think tanks, municipal, (and)

state and federal policy makers” among the list of stakeholders who would benefit from increased awareness of TWH.

NIOSH Response: NIOSH agrees that it is vital to engage and partner with a variety of existing efforts and worker-related systems, such as healthcare and workers compensation, and has included this in the Policy goals section shown here:

“Activity/Output Goal 3.2.2: Explore strategies to incorporate TWH programs and activities within the general health care delivery system, including insurance, risk management, and workers’ compensations systems.”

The addition of these same fields within the Practice category of goals is aimed at better capturing the range of fields relevant to TWH:

“Activity/Output Goal 2.1.3: Establish partnerships with labor, employer, government, professional, and academic organizations to improve the implementation of TWH best practices in the workplace.”

In a similar vein, seeking to expand awareness of the TWH message to even broader audiences, which may include policy and research institutes, trade associations, and policy makers at the city, state, and national levels, is an endeavor NIOSH agrees would be important for the long-term uptake of the program.

Stakeholders’ Comments regarding leading by example: Stakeholders cited that it would be important for institutions dedicated to advancing TWH research to implement the tenets of TWH for their own workers.

NIOSH Response: NIOSH agrees that institutions that are leaders in TWH research should lead by example by implementing TWH research findings in their own workplaces. In fact, one of the five program arms of the Office for TWH (HealthiestNIOSH, the TWH Program for NIOSH Employees) is tasked with creating a NIOSH workforce that embraces TWH principles. If organizations that seek to expand the body of TWH research fail to adequately protect their own workers, they would in fact be doing the field a disservice.

Category 4 – Policy Goals

Stakeholders’ Comments: Stakeholders suggested using organizational and public policies to create certain actions, such as payment for effective interventions. They also stressed emphasis on policies that would ensure fairness and uniformity in worksite programs. It was also recommended that the Agenda incorporate policy strategies that would encourage employer buy-in and empower employers and employees to collaborate.

NIOSH Response: NIOSH agrees with stakeholder comments that organizational and public policies can be useful in putting into place effective interventions and practices. It has added language to address this, as shown in the following goal:

“Activity/Output Goal 3.2.1: Build capacity for workplace improvement at all levels by enhancing policy initiatives that promote TWH.”

The Agenda’s Research goals also state the need for information to understand health outcomes and organizational effectiveness. The practice goals of the agenda aim to increase translation and facilitate adoption of best practices. The Agenda also now encourages stakeholders at all levels to become involved in ensuring that there is buy-in and action taken by employers and employees to address “big picture” issues.

Category 5 – Capacity-Building Goals

Stakeholders' Comments regarding defining TWH competencies: Stakeholder comments identified the need to define parameters for competencies, training, and certification of practitioners in TWH while engaging existing disciplines and for universities to get involved in providing TWH training.

NIOSH Response: NIOSH agrees with the stakeholders' comments that NIOSH should help define parameters of TWH training, education, and basic competencies that professionals in many disciplines and at all levels would need to effectively apply TWH concepts. In the Agenda, NIOSH has identified stakeholders who would benefit, influence, and adopt a comprehensive health systems approach; these include but are not limited to researchers, allied health professionals, health benefits managers, health promotion professionals, human resource managers, labor organizations, occupational safety and health professionals, professional organizations, and small and large employers. The Agenda Research goals will help to inform the critical issues, as well as research and program needs, to further these efforts. The Agenda Capacity-Building goals provide a framework for working with key partners from multiple disciplines who have the experience and position to reach a wider audience at the regional, state, and local level; who can identify important competencies and curriculum; and who are in a position to offer formal classes, seminars, conferences, and continuing education to promote TWH initiatives and best practices. The Agenda also stresses the need for continued work with existing partners, professional societies, and associations to create new and/or modify existing competencies, and to develop a set of educational or occupational criteria in order to standardize, accredit, and evaluate TWH educational programs and practices.

Stakeholders' Comments regarding partnerships: Stakeholder comments called for increased collaboration and engagement of partners and audiences, emphasizing the need to work with a variety of stakeholders, including Federal entities such as the NIH, the Community Services Task Force at the CDC, and others, to facilitate the implementation and funding of TWH and to introduce TWH concepts among different but related disciplines.

NIOSH Response: NIOSH concurs with stakeholders that it is only through partnerships with academic, business, labor, Federal, and other organizations and partners that the Nation can accomplish the Capacity-Building and other goals outlined in the Agenda. Our partners are the connection with our local, national, and international stakeholders for conducting training, research, translation, and implementation of programs to address identified critical needs and issues. The Agenda Capacity-Building goals stress this importance.

Category 6 – Economics and Business-Case

Stakeholders' Comments on NIOSH's definition of business case: Stakeholder comments advocated for modification of the NIOSH business-case definition. Primarily, stakeholders expressed concern that the definition was too narrow and that it should include more than an economic component and should refrain from shifting responsibility onto the worker.

NIOSH Response: Although NIOSH has not found a consistent definition of “the business case,” this expression is commonly used to mean an employer’s “bottom line.” There are many economic and other factors that affect what employers do, which in turn affects how (cost-) effective employer efforts are in preventing worker injury, illness, and death, as well as many metrics for the benefits of strategies to prevent worker injury and illness. Although monetary benefits are important for employers, under Research, Strategic Goal 1, the Agenda includes goals that stress the need for many outcome metrics that include health status (morbidity and mortality) and health-related quality-of-life indicators of illness, injury, and well-being to better understand the efficacy and effectiveness of integrated intervention strategies. The Agenda has added employee morale and organizational reputation under Strategic Goal 1, as well as a bullet point on factors that affect worker injury and illness.

The Agenda now includes an updated definition of business case (also see <http://www.cdc.gov/niosh/programs/econ/risks.html>, which contains similar language about the economic burden of worker injury and illness):

“NIOSH considers the “business case for prevention” to be an economic evaluation from the employer’s perspective that demonstrates improvements in productivity, profitability, or sustainability through the implementation of policies, practices, or technologies that prevent worker injury and illness. Economic evaluations identify, measure, value, and compare the costs and benefits of different interventions to effectively allocate resources. For employers, correctly identifying how their “bottom line” is impacted by their current and potential future activities, including worker injury and illness prevention activities, is at the core of successful businesses.”

“Economic evaluation” included in NIOSH’s definition of “business case” is defined broadly. For example, the Agenda included the concept of sustainability, which would allow assessment of prevention strategies on the employer’s level in the long-term. The definition provided is about costs and benefits to employers as a result of prevention strategies that reduce worker injury and illness.

Any economic evaluation assesses cost and benefits from a specific perspective or on a specific level of analysis. The societal perspective includes all costs and benefits, whereas the worker’s perspective includes worker costs and benefits. The societal perspective is comprehensive and can be used along with partial perspectives to identify important gaps in research, policy, or practice. For example, the societal perspective helps to identify “market failures.” One example is “externalities,” which occur when one party, such as an individual or employer, creates or contributes to costs that are not borne by that party. For instance, an uncontrolled hazard at the workplace might result in worker injuries whose costs will be borne by employers, as well as workers, and ultimately by taxpayers. Through the identification of market failures, economic analysis can guide efforts by employers and policymakers that aim to more effectively align the costs and benefits of different preventive interventions for workers, employers, and taxpayers. Presenting both the employer’s perspective and the societal perspective helps the audience to understand what the employers pay and how they benefit in the context of what society overall pays and how it benefits, as a result of a specific intervention. This, in turn, points to potential gaps in research, policy, and practice. Following standardized methods to conduct cost-effectiveness studies from partial and the societal perspectives is necessary to correctly understand such potential gaps. The Agenda has been modified to include the need for research from different perspectives. The Agenda has also been modified to include the need for research to understand further cost bearing and the various contexts for consideration, as well as the need for translation to ensure that stakeholders understand the limitations of estimates of return on investment, costs, benefits, etc.

Stakeholders’ Comments regarding return-on-investment (ROI) research: Stakeholders called attention to a recent report [Pronk 2013] illustrating the cost effectiveness of TWH interventions but commented that few interventions have demonstrated a true return on investment (ROI) and that further investigation was needed of costs for integrated interventions in contrast to more fragmented intervention approaches.

Pronk NP [2013]. Integrated worker health protection and promotion programs: overview and perspectives on health and economic outcomes. J Occup Environ Med 55(12 suppl):S30–S37.

NIOSH Response: The Pronk [2013] report cited in stakeholder comments specifically acknowledges that gaps remain with regard to understanding the economic consequences of TWH interventions. NIOSH agrees with Pronk regarding the paucity of data on the economic value of integrated interventions and that there is further need to investigate the business case for TWH interventions (Strategic Goal 1, Research). NIOSH has organized a formal program to advance research on economic aspects of occupational safety and health, including the business case for prevention and improvement in

methods and procedures to strengthen this line of research (<http://www.cdc.gov/niosh/programs/econ/>). NIOSH also asserts that additional research is needed on the intrinsic value that a healthy worker brings to an organization. The aim of the Agenda and the goals identified, such as Strategic Goal 1, is to facilitate engagement by stakeholders to be similarly involved in developing such research.

Stakeholders' Comments regarding intervention study methods: Stakeholders expressed concerns over lack of rigor in TWH intervention studies and drew attention to specific methodological limitations such as lack of uniformity in metrics employed by different investigators in these studies. Regarding methodological concerns, some stakeholders suggested a need for greater detail on study procedures and improved measures of economic outcomes in studies on return on investment for TWH interventions.

NIOSH Response: The recent review of TWH intervention research by Anger and colleagues [2015] noted that study designs were of reasonably high quality. NIOSH agrees, though, that there are areas for improvement in methodology, consistent with stakeholder concerns. (Note that this was a recommendation put forth by the independent panel for the NIH Pathways to Prevention workshop and a goal that the Office for TWH has selected for specific, internal focus in 2016). First, there is the fundamental issue of assessing intervention effectiveness. The metrics that summarize the cost-effectiveness of interventions, including their “value” or the return on investment, will not be methodologically sound and comparable to each other unless we use standardized methods of assessment. The CDC standardized methods presented in Haddix et al. [2003] provide a promising template. The Agenda has been expanded to call attention to these specific methodological concerns and to urge greater rigor in all aspects of study methodology in TWH intervention research.

Anger KW, Elliot DL, Bodner T, Olson R, Rohlman DS, Truxillo DM, Kuehl KS, Hammer LB, Montgomery D [2015]. Effectiveness of total worker health interventions. J Occup Health Psych 20:226–247.

Haddix AC, Teutsch SM, Corso PS [2003]. Prevention effectiveness: a guide to decision analysis and economic evaluation. Oxford: Oxford University Press.

Category 7 – At-risk Working Populations

Stakeholders' Comments: Stakeholder comments advocated for more emphasis on vulnerable and/or at-risk working populations. Additional focus on the challenges faced by the following groups of workers within specific settings and industries were stressed: immigrants, young individuals, older adults, multigenerational workforces, low income, ethnic/racial minorities, special needs (including temporary and permanent disabilities), rural and urban settings, and small and medium-sized businesses.

NIOSH Response: NIOSH agrees that it is imperative to consider the way work affects safety and health and to promote the well-being of all workers. NIOSH also recognizes that there are unique risks and opportunities relevant to workers' occupations, domicile, income, race/ethnicity, and generation/age that must be considered by employers as they design safe work that promotes TWH. The new NIOSH intramural Center for Productive Aging and Work and the NIOSH Program on Occupational Health Disparities work to facilitate knowledge-sharing on these relevant topics. To move the Nation forward on these issues, the Agenda captures these concerns in the following goals:

“Activity/Output Goal 1.1.2: Complete studies to understand the impact of new employment patterns, to include contingent work and low-wage workers, on worker safety, health, and well-being.

Activity/Output Goal 1.1.5: Study TWH interventions to target workers at high risk for exposure to both work-related and non-work hazards that impact safety and health in the workplace.

Activity/Output Goal 2.1.1: Determine effective practices leading to successful integration of worker safety and health protection with activities that advance the overall well-being (inclusive of work-life and work-family) of diverse worker populations in the full spectrum of work sectors.”

NIOSH agrees that rural workers are a difficult-to-reach population and recognizes that community resources may be lacking compared to large metropolitan areas. The Agenda, under Strategic Goal 1, currently addresses the importance of community efforts, which would be particularly beneficial for reaching workers in rural areas.

NIOSH agrees that because of the design of work within specific industries, workers face unique risks to their safety and health not present in all occupations. It is essential that worker safety and health programs are designed with a systems-level perspective that takes into account the multiple contexts (including industry culture) that affect workers’ safety and well-being both on and off the job. Besides the work of NIOSH TWH; the NIOSH Transportation, Warehousing, and Utilities Sector Program; and the NIOSH Work Organization and Stress-Related Disorders Cross-Sector, more work can be done by the Nation. The Agenda encourages such work by TWH stakeholders.

The Agenda has also been amended to emphasize the need to address TWH within specific occupations that are high risk and/or report increased prevalence of specific health outcomes as compared to the general population of workers.

As stated above, NIOSH agrees that, because of the design of work within specific settings, workers face unique risks to their safety and health not present in all settings. NIOSH further recognizes that resources and constraints vary according to business size. The NIOSH Small Business Outreach and Assistance Cross-Sector identifies occupational safety and health needs in small and medium-sized businesses, and more work can be done by the Nation to address these needs. The Agenda lists these priorities for the Nation.