

I. Introduction

The Traumatic Injury (TI) Research and Prevention Program of the National Institute for Occupational Safety and Health (NIOSH) is seeking external review by the National Academies (NA) to assess its contribution to the public good and to improve its research and management. There are three objectives for this review, to assess:

- **Progress in reducing acute traumatic workplace exposures, injuries, and deaths** that can be attributed (wholly or partially) to the activities, findings, outputs, and influence of the NIOSH TI Research and Prevention Program during the evaluation period—1996 through 2005. Progress will be measured through an assessment of the contribution of the TI Program toward intermediate and end outcomes. This will include analysis of links between the TI Program and the research and prevention activities of others, including further distribution, promotion, use, or adoption (intermediate outcomes) of TI findings and products; and analysis of relevant data about workplace exposures, injuries, and fatalities (end outcomes).
- **Progress in targeting new research** to the areas of traumatic occupational injury and death most relevant to future improvements in workplace protection.
- **Identification of emerging research areas** that appear especially important in terms of their relevance to the mission of NIOSH.

NIOSH believes that the Framework for the Review of NIOSH Research Programs¹ (“Framework”) developed by the Committee for the Review of NIOSH Research Programs will result in a fair evaluation of the TI Program. NIOSH expects that the work of the NA Evaluation Committees (ECs) will also help TI managers assess, adjust, and manage its research programs.

TI was guided in the preparation of this evidence package by the 12/19/2005 evaluation Framework.¹ The Framework outlines a process for review of NIOSH programs and an organized list of examples of the kinds of evidence that the research programs could provide to assist with that process.

The Executive Summary (Section II) outlines key points regarding the history, the drivers, the strategies, the activities, the outputs, and the outcomes—in short, the main contributions of the TI Program to the safety of U.S. workers.

In sections of the package that follow the Executive Summary, we provide a brief overview of NIOSH (Section III), followed by an overview of the TI Program (Section IV).

NIOSH believes that the TI research program may be most coherently presented in terms of eight research goals. These goals were used to organize Section V of this evidence package.

- 1.Reduce injuries and fatalities due to motor-vehicles
- 2.Reduce injuries and fatalities due to falls from elevations
- 3.Reduce injuries and fatalities due to workplace violence
- 4.Reduce injuries and fatalities due to machines
- 5.Reduce acute back injury

- 6.Reduce injuries and fatalities among workers in Alaska
- 7.Reduce injuries and fatalities to emergency responders
- 8.Reduce injuries and fatalities to working youth

These goals have emerged principally from surveillance data on fatal and nonfatal traumatic injuries (motor-vehicle crashes, falls, violence, machines, back injuries, Alaska), and from Congressional directives (emergency responders, violence, working youth).

Descriptions of each sub goal include at least these parts:

- Issue—the research need addressed by this part of the TI Program.
- Approach—the overall strategy and research activities undertaken both by TI staff and extramural grantees.
- Outputs and Transfers—a description of the research outputs (e.g., reports and journal articles) and activities by the TI Program and grantees to transfer the outputs to others.
- Intermediate Outcomes—the actions of other individuals and organizations after they receive the outputs of the TI research program. Examples of intermediate outcomes are standards, technologies, training methods, analytic methods, and control strategies—in short, any response indicating further distribution, use, or adoption of NIOSH-funded outputs by others.
- End Outcomes—changes related to worker health, including decreases in injuries and deaths, or decreases in exposures or risk factors resulting from TI research and prevention efforts.
- What’s Ahead—activities planned to extend the research program and potential outputs and intermediate outcomes that may result.
- External Factors—circumstances and forces that typically are beyond program control or influence that nevertheless currently (or could) impact the program (negatively or positively).
- References—a list of citations of source material keyed to reference numbers in the text of the evidence package.

Section VI presents the latest set (December 2006) of the TI Program’s interim research goals for the future.

Appendix 1 contains the supporting evidence for the research goals, including bibliographic citations of outputs described in each goal/sub goal narrative, as well as other evidence such as lists of partners, cooperative agreements, extramural projects, legislative actions or standards, etc.

Subsequent appended information—all available on the CD and Web versions of this evidence package—provides more detail about the following topics:

- Specific relevant TI projects, both intramural and extramural (Appendix 2)
- TI management and research staff (Appendix 3)
- TI informational resources (Appendix 4)
- TI laboratory facilities and specialized equipment (Appendix 5)
- TI partners and stakeholders (Appendix 6)
- TI-sponsored or supported workshops and conferences (Appendix 7)
- Previous or current program evaluations (Appendix 8)
- Citation and dissemination data for TI-related NIOSH publications (Appendix 9)

What is meant by “work-related traumatic injury” in this evidence package?

“Trauma,” from the Greek word meaning “wound,” is commonly defined in English usage as “an

injury or wound to a living body caused by the application of external force or violence.”² Throughout this evidence package, “work-related traumatic injury” refers to any damage inflicted to the body by energy transfer during work with a short duration between exposure and the health event.³

Traumatic injury as described herein is distinguished from psychological trauma—i.e., a wound to the psyche resulting from a deeply disturbing experience or the emotional shock following a stressful event or a physical injury. Acute traumatic injury includes acute injuries to the musculoskeletal system caused by one-time exposures to forces that exceed the body’s capacity, such as may occur during lifting and handling tasks. However, acute musculoskeletal injuries are distinguished herein from musculoskeletal injuries that are caused by repetitive trauma—exposures or motions that alone are not sufficient to cause acute injury, but that cumulatively may produce an injury to the musculoskeletal system. Musculoskeletal disorders that result from repetitive or cumulative trauma are the focus of a separate NIOSH research program.

The NIOSH research programs selected for evaluation, including TI, are not all mutually exclusive; in fact, TI overlaps with sector-specific programs, such as Agriculture, Construction, and Mining. The Mining Safety and Health Program, in particular, includes a substantial traumatic injury research component. Although the current NIOSH Pittsburgh and Spokane Research Laboratories (PRL and SRL, respectively), joined NIOSH in Fiscal Year 1997, the budget and function of the two mining research laboratories (formerly of the U.S. Bureau of Mines) have remained relatively independent of other NIOSH research divisions and programs, due largely to stakeholder interest and Congressional oversight. Thus mining-related Traumatic Injury research (which was previously reviewed by NA with the other Mining programs⁴) is not included here.

Throughout this evidence package, the terms “traumatic injury” and “safety” are often used in ways that make them interchangeable (e.g., read “safety” research as “TI” research).

