The Health and Safety Effects of Accidents on Intermodal Transportation Workers

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Project Funding
National Center for Intermodal Transportation: $5,000
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Project Objectives
The objectives of this research will be to provide an in-depth assessment and identification of possible effects of involvement in work related accidents and critical incidents on subsequent performance of critical job tasks and overall productivity of persons in the intermodal transportation industry. In addition, it is hoped that an assessment of the key issues relative to the costs that can accrue due to the long term effect of involvement in traumatic accidents will be determined based on a statistical modeling of the numbers and types of accidents relative to the types of activities required. This will lead to the development of a model of safety risks and potential preventative activities and training programs as well as a real estimate of the long term, not just the immediate consequences of work related accidents. Recommendations from these studies will be used to advise various groups on the key training and prevention activities that will later be needed to ensure enhanced and continued productivity.

Project Abstract
The goal of this project is to review and identify individuals who have been involved in serious traumatic accidents while working in the intermodal freight and passenger transportation industry. Due to the fact that many of the ancillary services to the movement of freight and people are contracted out to third party companies, as well as transit, private and public agencies there are an increasing number of people working in intermodal transportation that fall outside the immediate scrutiny of larger and more well-trained organizations. The understanding of the long term effects of non-fatal traumatic accidents and injuries are not fully understood in terms of their impact on work related performance and efficiency. Some writers feel that there is a loss of alertness, vigilance, and awareness on the part of some individuals involved in these types of accidents.
Additionally, with the increase in passenger intermodal operations involving rail and transit operations there may be an increase in psychological stress and trauma following involvement in critical incidents. The associated consequences of involvement in traumatic accidents may be to increased fatigue, decreased vigilance, increased absenteeism, loss of productivity and some long term health effects. The FTA has recently awarded a grant to one other university to study related aspects of this problem. In addition, the NTSB has listed fatigue as one of the top ten most wanted safety concerns in the rail, air, and transit areas. Many factors are related to the occurrence of fatigue including the long term psychological sequelae of involvement in serious non-fatal accidents at work. Therefore, the present study is designed to look at those longer term effects to properly advise various intermodal companies as to ways to address these concerns. This study will survey individuals who have been involved in those accidents and determine the potential long term impact on work performance. After contacting several intermodal transportation companies we will conduct a survey of a random sample of individuals who have been involved, as well those not involved in serious traumatic accidents, and evaluate their mental and physical health and then examine the impact of their involvement on their work performance. Work performance will be evaluated using supervisor ratings and other unobtrusive measures of their performance. Later, a statistical analysis of the long term financial impact of their involvement will be conducted and examined. Lastly, recommendations to the various intermodal transportation agencies and companies will be made.

**Task Description**

To complete the proposed project the following action steps will be pursued sequentially and concurrently:

1) The first task will be identifying several key organizations who will participate in our study. At the present time we have obtained initial agreements from several intermodal passenger operations including Amtrak and Metra, as well as the cooperation of the labor organizations. We may be able to obtain the cooperation of several transit organizations and also freight rail organizations.

2) Second, once we identify the potential participants we will administer a brief survey to a random sample of employees to determine the rate at which individuals have been involved in critical accidents and also the extent to which they currently report physical or mental consequences of that involvement. A sub set of these populations will be interviewed in more detail to determine their current level of work related performance. Additionally, supervisors will also be asked to evaluate the participants work related performance.

3) Third, after obtaining these results from step two we will calculate and model the economic impact of the accident involvement symptoms on the performance ratings to determine a cost associated with this involvement. Most research investigating accident involvement simply looks at the cost of health care, replacement or repair of equipment and lost wages. This study is different in that it attempts to estimate additional productivity losses over the long term that might be associated with the long term effects of involvement.
in traumatic accidents. Other research points to the presence of potential longer term consequences of these accidents such increase absenteeism, loss of vigilance, motivation and the like that lead to other accidents and a general loss of productivity.

4) Fourth, based on these results we will develop recommendations that will lead to the improvement of the safety efficiency and productivity of the intermodal transportation system.

Technology Transfer
At least one paper will be prepared and submitted to a refereed conference, such as the TRB Annual Meeting, for presentation. An additional conference presentation will made at the Global Supply Chain Conference in Atlanta. At least one paper will be submitted to appropriate transportation journals, such as the *World Review of Intermodal Transportation Research*. Results of the proposed project will also be disseminated through the various websites associated with NCIT and ITI where those interested will be able to access the final report.

Benefits of Project
There are a number of key benefits of this project. First, it will address a number of the key issues regarding safety in the intermodal transportation industry which is always a continuing and ongoing concern, Second, it will identify the as yet unstudied hypothesis of regarding the potential long term effects of involvement in traumatic accidents on work performance and efficiency in the industry. In addition, it will look at the long term psychological and physical impacts of involvement in a traumatic accident. It will identify the long term costs of involvement in traumatic accidents. Lastly, the project could lead to recommendations relative to the training and education of employees, supervisors, and safety professionals involved in intermodal transportation.