

The purpose of this Forest Industry Health Research Program (FIHRP) has completed a literature review to determine the impact of shiftwork on performance, health, safety and overall effectiveness and the relevance to the pulp and paper industry. A report is now available titled **"Shiftwork in the pulp and paper industry: Coping Strategies and Recommendations"**. To request a copy, phone **Agi Lee** at the Pulp and Paper Forum at (604) 777-1533, send a fax to (604) 777-1567 or email alee@paperforum.com. Non-members of the Forum may be charged for the reports.

SHIFTWORK IN THE PULP AND PAPER INDUSTRY: COPING STRATEGIES & RE- COMMENDATIONS

FOREST INDUSTRY HEALTH RESEARCH PROGRAM

c/o Pulp & Paper Forum
#100-620 Royal Avenue
New Westminster, BC
V3M 1J2
Telephone: (604) 777-1533
Facsimile: (604) 777-1567

Fatigue effects related to shiftwork are of growing concern in modern society. Evidence indicates that workers in industrialized countries, on average, are not receiving sufficient sleep. The result is an accumulation of sleep debt, which has significant effects on job performance, health and safety. In the United States alone, the cost of fatigue related motor vehicle accidents is estimated at \$37.9 billion over a single year.

As industry moves increasingly toward 24 hour operations, more of the population is having to work shifts. The pulp and paper industry is no exception, with most mills operating on a 12 hour rotating shift schedule. The possibility of workers accumulating a significant sleep debt is, therefore, very high. At the same time this industry is moving towards greater use of computer technology and automation. With this new technology the worker's role is changing considerably. Modern supervisory and process control systems in the pulp and paper industry require operators to perform the role of a systems monitor. However, humans have limited capacity to maintain focused attention and vigilance. These skills become significantly impaired after a short duration, particularly if the operator has accumulated sleep debt.

In combination with sleep debt from working shifts and changes in the types of tasks toward automation and systems monitoring, the potential effects of fatigue on performance, health, safety and overall effectiveness are considerable. As pulp and paper operations increase in size, the corresponding cost associated with human error is also increasing. To reduce the possibility of human error associated with shiftwork in the pulp and paper industry, factors such as the work structure, shift rotation patterns and training in coping strategies should be considered. The review examines current research of relevance to the pulp and paper industry in British Columbia. Topics include: sleep; fatigue; circadian rhythms; task characteristics; health and safety; financial costs; and strategies to cope with the effects of fatigue from shiftwork. Coping strategies from a variety of sources are outlined, which include: Seven Rules for A Good Shift System; 35 Steps to Try for Good Sleep on Shiftwork; 11 Guidelines for Eating on Shift-Work; Good Nutrition Equals Good Sleep; Physical Fitness-6 Rules; Can't Sleep! More Strategies That May Help; More Coping Strategies: Socially, Domestically and at Work; and Suggestions for Keeping Social Contact. Recommendations are made for additional research specific to the pulp and paper industry, addressing the type and characteristics of shifts, the type and sequencing of tasks during specific shifts, as well as the implementation and validation of coping strategies specifically for the pulp and paper industry.