

ERGONOMICS AND PROCESS CONTROL DESIGN

FOREST INDUSTRY HEALTH RESEARCH PROGRAM

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The purpose of this Forest Industry Health Research Program (FIHRP) bulletin is to summarize the results of a report entitled ***Ergonomics and Process Control Design for the Pulp and Paper Industry***". The report examines the relevance of ergonomics to pulp and paper process control operations, and to provide a basis for recommending future research directions in this area. To request a copy, phone **Agi Lee** at the Pulp and Paper Forum at (604) 777-1533, send a fax to (604) 777-1567. Non-members of the Forum may be charged for the reports.

Systems being used for process control in modern industry are changing rapidly. As production capacities increase and as facilities make extensive use of computers and automation, operators are becoming increasingly involved in process monitoring and decision making in complex systems.

Ergonomics deals with both the physical and behavioural aspects of the human operator in relation to the work environment. To understand how these areas inter-relate to affect performance and safety, ergonomic issues are examined from a broad perspective. In doing so, the systems approach is used to investigate control room features ranging from characteristics of the physical and organizational environment to those of the job itself, including the design of controls, displays and human computer interaction.

This review is presented in 11 sections. Section 1 gives definitions for some of the terminology used to detail the human factors issues related to process control. Section 2 describes the general layout of the report. Section 3 provides a definition of ergonomics, identifying the scope of issues and the disciplines encompassed by this field. Section 4 describes the systems approach to ergonomics. Section 5 discusses ergonomics in relation to modern technology and automation. Section 6 addresses process control and ergonomics from a systems perspective; this section makes particular reference to organizational and physical environments in relation to control rooms. Section 7 discusses the job of process control. Section 8 deals with human computer interaction and useability studies. Sections 9 and 10 provide a summary and a list of recommendations. Section 11 is a list of references used in developing the report.

This paper is the first step towards developing a set of ergonomic guidelines for the pulp and paper industry in British Columbia. The next step is to work in close collaboration with a team of industry experts to identify issues that are particularly relevant to the industry at this point in time. Industry specialists provide the domain expertise while ergonomists provide the principles and process for effective evaluation and intervention. The end result is improved performance, productivity and safety.