"1 Operational job analysis should include a survey of the nature of the task, the work surroundings, the location of controls and instruments, and the way the operator performs his duties.

"2 A functional concept of accidents is implied, that is, the errors that may occur while the operator is working on the machine are anticipated The repetition or recurrence of near or real accidents clearly indicates a need for redesign

"3 From the 'human limitations' point of view, it should be assumed that no worker is perfect In fact, he may be far below the ability adjudged by the machine designer If the worker's duties are too complex, the cumulative burden is great when he reaches or exceeds his limits of attention and ability

"4 A wide margin of safety should be provided to eliminate any possible situation that places the operator near his maximum ability with regard to aptitude or effort, especially when adverse factors enter the picture"

Job Safety Analysis

To uncover hazards that may have been overlooked in the layout of the plant and in the design of machinery, equipment, and processes, or may have developed after production was begun, a continuing program of activities must be carried on One of the most important of these activities is job safety analysis *

Definition

A job safety analysis is a procedure to make a job safe by

1 Identifying the hazards or potential accidents associated with each step of the job

2 Developing a solution for each hazard that will either eliminate or control the exposure

Once the hazards are known, the proper solutions can be developed Some solutions may be physical changes that control the hazard, such as placing a guard over exposed moving machine parts Others may be job procedures that eliminate or minimize the hazard, for example, safe piling of materials

Some job steps may have no hazards associated with them, but other job steps may each be accompanied by one or more hazards Some hazards are conditions, some are actions All are potential causes of accident.

A job safety analysis can be written up in the manner shown in Fig 4-5 In the left-hand column, the basic steps of the job are listed in the order in which they occur The middle column describes the hazards or potential accidents associated with each job step The right-hand column gives the safe procedures that should be followed to guard against the hazards and to prevent potential accidents (Turn page for illustration)

For convenience, both the job safety analysis procedure and the written description are commonly referred to as a JSA

The four basic steps in making a job safety analysis are

1 Select the job to be analyzed

2 Break the job down into successive steps

3 Identify the hazards and potential accidents

4 Develop ways to eliminate the hazards and prevent the potential accidents

Selecting the job

A job is a sequence of separate steps or activities that together accomplish a work goal Some jobs can be broadly defined in general terms of what is accomplished Making paper, building a plant, mining iron ore are examples Such broadly defined jobs are not suitable for a JSA Similarly, a job can be narrowly defined in terms of a single action Pulling a switch, tightening a screw, pushing a button are examples Such narrowly defined jobs also are not suitable for a JSA

Jobs suitable for a JSA are those job assignments that a line supervisor may make Operating a machine, tapping a furnace, piling lumber are good subjects for job safety analyses They are neither too broad nor too narrow

Jobs, even though they fit the description just given, should not be selected at random for analysis The most hazardous and those with the worst accident experience should

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*Bethlehem Steel Company, Bethlehem, Pa "Job Safety Analysis." *Bethlehem Steel's Supervisory Safety Manual* Chapter 5