

Job Safety Analysis & Task Training

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JOB SAFETY ANALYSIS

Job Safety Analysis (JSA) is a very effective process. It is not difficult to learn and it can be applied to any job or task by anyone who knows how to perform that job.

THE NATURE OF TASK TRAINING

Task training exists in every organization, yet little is said or done to ensure that it is accomplished in an effective manner. In some instances an immediate supervisor accomplishes this training with little or no experience in training techniques. In other instances a “trainer” does portions of the training, and the “hands on” portion of the training is left up to the learner while being monitored by someone currently performing the task. In many situations, results obtained are less than satisfactory.

Task training requires the application of sound training principles if it is to be effective. This is especially true if an organization is seeking motivated employees committed to quality. Quality in this case is defined as doing a job “right” the first time and the only way to do a job “right” is to do it the safe way. Quality, safety and productivity are all interrelated and failure to give attention to any of these elements during the training process will adversely affect the elements and, ultimately, profitability.

Remember that when conducting task training all of these elements need to be addressed as they support one another.

When training employees to do a job the “right” way, there is no better tool than a Job Safety Analysis (JSA).

To obtain the desired results from task training, the trainer and the immediate supervisor of the learners must work together. Failure to do so can result in wasted training expense and confused employees with low motivation. Why is this so? An employee may be trained in a correct and safe way of doing a task but not allowed or encouraged to use what has been learned. This happens quite often in organizations where middle managers and supervisors have not been trained in the same methods as those they supervise.

For an organization to obtain the best possible results from training, it is absolutely essential that supervisors know and accept the processes and procedures being taught to their employees. This is important because the supervisors must support, reinforce, and hold the employees accountable for using what they have learned. Primarily, the support and reinforcement need to be in the form of coaching and positive reinforcement actions that focus on safety and quality performance of the task learned. Without this support to the training activity, employees may acquire knowledge with respect to a job, but results will be minimal or possibly never achieved.

Quite often the trainer does not consider the full scope of task training and, although “Task Training” (as perceived by the trainer) is given, the results are not satisfactory. An example of this might be training an equipment operator. Too often, task training for an equipment operator is limited to pre-start setup, operation, and shutdown of the equipment. Consideration is not given to other than basic equipment operation. The whole job must be assessed to identify all tasks that require training. An example of one task often overlooked in the job of an equipment operator is transporting or moving the equipment from one location to another. Also, with respect to portable or mobile equipment use, the tasks will vary from one work site to another to the extent that the task is changed, exposing the operator to totally different hazards.

Since task training is common to all jobs, the following learning outcomes should be considered. Where applicable, trainees should:

- Understand the task or process and its working relationship to overall goals of the operation.
- Be able to perform pre- and post-operations checks on any equipment they will operate in the performance of their jobs.
- Demonstrate proper start-up and shutdown procedures on equipment they will operate in the performance of their jobs.



- Demonstrate and describe safe operating procedures with respect to any equipment or processes that are a part of, or that have a direct relationship to these tasks. This will include moving, transporting, or relocating equipment and machinery.
- Understand required maintenance and servicing procedures for any equipment or processes that they use in their tasks. If required to perform maintenance or service tasks, they will be required to demonstrate safe procedures for those tasks.
- Demonstrate how they will deal with or report problems or malfunctions, to include emergency shutdown processes or procedures.
- Demonstrate their understanding of company and federal health and safety standards or procedures applicable to their tasks.
- Be trained on any new or modified machines, equipment, or processes and demonstrate safe practices in the actual work environment. They must also demonstrate understanding of the difference between old and new or modified equipment and processes to include the impact these differences have on safety and health.



It is emphasized that task training must always be conducted by a qualified trainer, operator, or lead person who is current in the task, equipment, machine or process to be learned. It is beneficial if task trainers are trained in the process of instruction. Two training procedures that may be used are:

All persons receiving task training can be given supervised practice in a non-work environment. During this training they are to demonstrate that they can properly operate and use any equipment or machines, and that they understand the proper procedures and processes affiliated with the task, or

All persons receiving task training can be supervised in the operational environment during work. They should be supervised until they demonstrate safe and proper operation of all equipment and machines to include all processes and procedures affiliated with the task. In addition, they should be able to explain why specific procedures/processes are designated as the “safe procedure”. It is suggested that Job Safety Analyses (JSAs) be used to the maximum extent possible in every task training effort, particularly on high-risk jobs.

Methods that may be used in task training include:

- Classroom training
- Question and answer techniques
- Demonstration with real or mock-up equipment
- Supervised student practice with coaching and feedback
- Supervised On the Job Training (OJT) with coaching and feedback

Training tools add variety to training and may be used to help in learning skills. Videos and films alone do not constitute complete training and must be used in conjunction with practice sessions, quizzes and evaluations. Having a participant read an operations manual or a checklist can never be substituted for a full training course. Training has to be a practical exchange of information and skills that may then be demonstrated and evaluated.

Some examples of training materials are:

- Lesson plans
- Company policies and procedures
- Operating manuals and checklists
- Mock-ups or actual equipment and machines
- Workplace diagrams
- JSAs and associated job breakdowns
- Videos, films and CD ROMs
- Overhead slides, 35-mm slides, computer programs

The evaluation process for task training will vary with each and every task. In some cases, questions and answers may be adequate. In other cases accurate demonstration of the learned skill or ability is essential. In all cases the evaluation should address the three areas of safety, quality and productivity (rate of work) because the effort committed to each of these areas must be compatible to sustain a continued successful operation.



JOB AND TASK RELATIONSHIPS

Every organization uses some method for categorizing jobs. The most common practice is the use of job titles. Examples of job titles frequently used are truck driver, heavy equipment operator, supervisor, front-end loader operator, machinist, maintenance person, mill operator, laborer, etc. These same job titles are used by many organizations and yet they mean different things in different organizations. Even though they have similar job titles, the tasks that must be performed require different skills. Skill differences result from different types of equipment and different job specializations.

There are many other reasons for these differences and they all impact the make-up of an organization's task training plan. If there were no differences and if jobs did not change, the same task-training plan could be used for all organizations. Because there are differences, and because employees must be trained on the various tasks within their jobs, applicable tasks must be identified and correlated with the appropriate job (job title).

This is the first step in the development of a task-training plan. To simplify this step, draw a matrix listing each of the job titles on one side and the task or duties associated with the job title on the other. This matrix, when completed, provides a complete picture of the regular task training required relative to each job title. It does not show special task training needed due to process, procedure or equipment changes. These training needs must be identified as changes occur.

When all job titles have been added to the matrix, and there may be several in larger organizations, you will note that there are many common or similar tasks that will allow groups of persons to be trained at the same time. The matrix will also reveal backup persons for certain tasks in the event extra or additional skills are required.

PREPARING THE JOB BREAKDOWN AND A JSA

When preparing a JSA, the first task is to do a job or task breakdown. It should be noted that both terms, "job" and "task" were used in relation to the term breakdown. A breakdown can be applied to a complete job, but in most instances, the complete job is composed of many tasks and is too broad to allow an effective breakdown and JSA. Hereafter, the term job will be used meaning either a complete job or an element of a job often referred to as a task.

The first decision to be made is should the whole job be studied or should the breakdown be made on tasks within the job. When reviewing the tasks covered by any job title it is relatively easy to recognize work segments or tasks appropriate for making a job breakdown and a JSA. What may be of more importance is which should be done first. This can be determined by assessing risk levels or by reviewing past accident records. In addition, experienced operators should be asked about what they see as being the most hazardous aspects of their jobs.

Once it has been decided which job will be reviewed, several different approaches can be taken. One approach is to have several experienced operators discuss the job with you and have them detail the steps within the job. Another approach would be to observe an experienced operator and then write down the steps. When possible, it is suggested a combination of both be used and then have one or two experienced operators review the steps that have been identified.

When preparing the breakdown, those items identified as steps should be a logical segment of the process that advances the work to completion. Also, the “step” should address what the worker must do. Throughout the review, look closely for “key points”. These are items that are “key” to doing the job correctly, safely, efficiently and accurately. When looking for key points there are essentially two categories:

- Job knowledge items, and
- Potential hazards

When looking for knowledge items, keep alert for those things that can make or break a job, or things that take a special knack, and those items essential to a safe operation. Preface items essential to safety with the title of “Safety Item” when entering them in the knowledge block. As you enter each step and each key point, look for potential hazards and list them in the block marked Potential Hazards.

After you have completed the breakdown, study the potential hazards to determine if any or all can be eliminated. If they can, action should be taken to get the hazard removed. When the hazard is removed, the breakdown and JSA can be finalized. If the job must be performed while the hazard is being eliminated or if it cannot be eliminated, actions that can control the hazard must be devised. These controls are entered into the hazard control block. These controls would include such items as safety equipment to protect the operator. This provides a completed job breakdown with a completed JSA to guide persons performing the task.

Periodic reviews of job breakdown and JSA are necessary to ensure they remain current with processes and procedures if they should be changed.



SAMPLE - JOB SAFETY ANALYSIS FORM

CLEANING INSIDE SURFACE OF CHEMICAL TANK—TOP MANHOLE ENTRY

SEQUENCE OF JOB STEPS	HAZARDS	RECOMMENDED PROTECTION OR PROCEDURE
<p>1. Determine what is in the tank, what process is going on in the tank, and what hazards this can pose</p>	<p>Explosive gas. Improper oxygen level. Chemical exposure — Gas, dust, vapor:</p> <ul style="list-style-type: none"> • irritant • toxic <p>Liquid:</p> <ul style="list-style-type: none"> • irritant • toxic • corrosive • heated <p>Solid:</p> <ul style="list-style-type: none"> • irritant • corrosive • Moving blades/ equipment. 	<ul style="list-style-type: none"> • Establish confined space entry procedures (OSHA standard 1910.146). • Obtain work permit signed by safety, maintenance, and supervisors. • Test air by qualified person. • Ventilate to 19.5% -23.5% oxygen and less than 10% LEL of any flammable gas. Steaming inside of tank, flushing and draining, then ventilating, as previously described, may be required. • Provide appropriate respiratory equipment — SCBA or air line respirator. • Provide protective clothing for head, eyes, body, and feet. • Provide harness and lifeline. (Reference: OSHA standards: 1910.106, 1910.146, 1926.100, 1926.21(b)(6); NIOSH Doc. #80-406). • Tanks should be cleaned from outside, if possible.
<p>2. Select and train operators</p>	<p>Operator with respiratory or heart problem; other physical limitation. Untrained operator— failure to perform task.</p>	<ul style="list-style-type: none"> • Examination by industrial physician for suitability to work. • Train operators. • Dry run. (Reference: National Institute for Occupational Safety and Health (NIOSH) Doc. #80-406).
<p>3. Set up equipment</p>	<p>Hoses, cord, equipment — tripping hazards. Electrical — voltage too high, exposed conductors. Motors not locked out and tagged.</p>	<ul style="list-style-type: none"> • Arrange hoses, cords, lines, and equipment in orderly fashion, with room to maneuver safely. • Use ground-fault circuit interrupter. • Lockout and tag mixing motor, if present.
<p>4. Install ladder in tank</p>	<p>Ladder slipping.</p>	<p>Secure to manhole top or rigid structure.</p>

SAMPLE - JOB SAFETY ANALYSIS FORM (CONT.)
CLEANING INSIDE SURFACE OF CHEMICAL TANK—TOP MANHOLE ENTRY

SEQUENCE OF JOB STEPS	HAZARDS	RECOMMENDED PROTECTION OR PROCEDURE
5. Prepare to enter tank	Gas or liquid in tank.	<ul style="list-style-type: none"> • Empty tank through existing piping. • Review emergency procedures. • Open tank. • Check of jobsite by industrial hygienist or safety professional. • Install blanks in flanges in piping to tank (isolate tank). • Test atmosphere in tank by qualified person (long probe).
6. Place equipment at tank-entry position	Trip or fall.	<ul style="list-style-type: none"> • Use mechanical-handling equipment. • Provide guardrails around work positions at tank top.
7. Enter tank	Ladder — tripping hazard. Exposure to hazardous atmosphere.	<ul style="list-style-type: none"> • Provide personal protective equipment for conditions found. (Reference: NIOSH Doc. #80-406; OSHA CFR 1910.134). • Provide outside helper to watch, instruct, and guide operator entering tank, with capability to lift operator from tank in emergency.
8. Cleaning tank	Reaction to chemicals, causing mist or expulsion of air contaminant.	<ul style="list-style-type: none"> • Provide protective clothing and equipment for all operators and helpers. • Provide lighting for tank (Class I, Div. 1). • Provide exhaust ventilation. • Provide air supply to interior of tank. • Frequent monitoring of air in tank. • Replace operator or provide rest periods. • Provide means of communication to get help, if needed. • Provide tow-man standby for any emergency.
9. Cleaning up	Handling of equipment, causing injury.	<ul style="list-style-type: none"> • Dry run. • Use material-handling equipment.