Job Safety Analysis



Consultation Education & Training (CET) Division Michigan Occupational Safety & Health Administration Michigan Department of Licensing and Regulatory Affairs



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SP #32 (Revised 12/10)

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Introduction

Job-related injuries and fatalities occur every day in the workplace. These injuries often occur because employees are not trained in the proper job procedure.

One way to prevent workplace injuries is to establish proper job procedures and train all employees in safer and more efficient work methods. Establishing proper job procedures is one of the benefits of conducting a job safety analysis carefully studying and recording each step of a job, identifying existing or potential job hazards (both safety and health), and determining the best way to perform the job or to reduce or eliminate these hazards. Improved job methods can reduce costs resulting from employee absenteeism and workers' compensation, and can often lead to increased productivity.

This booklet explains what a job safety analysis is and contains guidelines for conducting your own step-by-step analysis. A sample of a completed job safety analysis and a blank job safety analysis form are included at the back of this booklet.

It is important to note that the job procedures in this booklet are for illustration only and do not necessarily include all steps, hazards, or protections for similar jobs in industry. In addition, standards issued by Michigan Occupational Safety and Health Administration (MIOSHA) should be referred to as part of your overall job safety analysis. There are MIOSHA standards that apply to most job operations and also emphasize job safety analysis. Compliance with MIOSHA standards is mandatory.

Although this booklet is designed for use by supervisors, employees also are encouraged to use the information contained in this booklet to analyze their own jobs, be aware of workplace hazards, and report any hazardous conditions to their supervisors.

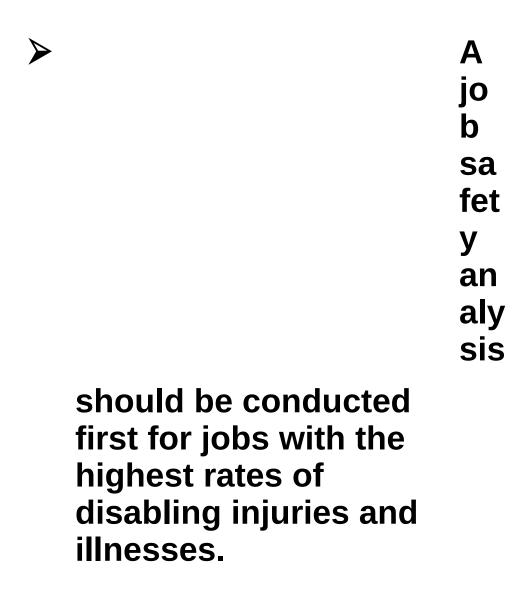
> Is the worker wearing personal protective clothing and equipment, including safety harnesses that are appropriate for the job?

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Selecting Jobs for Analysis

A job safety analysis can be performed for all jobs in the workplace, whether the job task is special (non-routine) or routine. Even one-step-jobs such as those in which only a button is pressed can and perhaps should be analyzed by evaluating surrounding work conditions.

To determine which jobs should be analyzed first, review your job injury and illness reports. Obviously,



Also, jobs where close calls or near misses have occurred should be given priority. Analyses of new jobs and jobs where changes have been made in processes and

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procedures should follow. Eventually, a job safety analysis should be conducted and made available to employees for all jobs in the workplace.

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Involving the Employee

Once you have selected a job for analysis, discuss the procedure with the employee performing the job and explain its purpose. Point out that you are studying the job itself, not checking on the employee's job performance. Involve the employee in all phases of the analysis from reviewing the job steps and procedures to discussing potential hazards and recommended solutions. You also should talk to other workers who have performed the same job.

Are lockout procedures used for machinery deactivation during maintenance procedures?

Conducting the Job Safety Analysis

Before actually beginning the job safety analysis, take a look at the general conditions under which the job is performed and develop a checklist. Below are some sample questions you might ask.

- Are there materials on the floor that could trip a worker?
- Is lighting adequate?
- Are there any live electrical hazards at the jobsite?
- Are there any chemical, physical, biological, or radiation hazards associated with the job or likely to develop?
- Are tools including hand tools, machines, and equipment in need of repair?
- Is there excessive noise in the work area, hindering worker communication or causing hearing loss?
- Are job procedures known and are they followed or modified?
- Are emergency exits clearly marked?
- Are trucks or motorized vehicles properly equipped with brakes, overhead guards, backup signals, horns, steering gear, and identification, as necessary?
- Are all employees operating vehicles and equipment properly trained and authorized?
- Are employees wearing proper personal protective equipment for the jobs they are performing?
- Have any employees complained of headaches, breathing problems, dizziness, or strong odors?
- Is ventilation adequate, especially in confined or enclosed spaces?
- Have tests been made for oxygen deficiency and toxic fumes in confined spaces before entry?
- Are work stations and tools designed to prevent back and wrist injuries?
- Are employees trained in the event of a fire, explosion, or toxic gas release?

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Naturally this list is by no means complete because each worksite has its own requirements and environmental conditions. You should add your own questions to the list. You also might take photographs of the workplace, if appropriate, for use in making a more detailed analysis of the work environment.

Is the worker wearing clothing or jewelry that could get caught in the machinery or otherwise cause a hazard?

Breaking Down the Job

Nearly every job can be broken down into job tasks or steps. In the first part of the job safety analysis, list each step of the job in order of occurrence as you watch the employee performing the job.

Be sure to record enough information to describe each job action, but do not make the breakdown too detailed. Later, go over the job steps with the employee.

Figure 1 shows a worker performing the basic job steps for grinding iron castings.

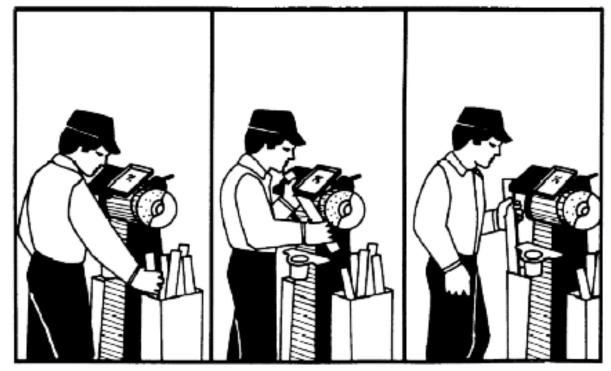


Figure 1. Grinding Castings: Job Steps

1.

box to right of

machine, grasp

Reach into metal Push 2. casting against 3. Place finished wheel to grind off

casting in box to burr.

left of

7

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machine.

casting, and carry to wheel.

Identify Hazards

After you have recorded the job steps, next examine each step to determine the hazards that exist or that might occur. Ask yourself these kinds of questions.

• Are there hazards that would require the use of personal protective clothing and equipment that are appropriate for the job?

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- Are work positions, machinery, pits or holes, and hazardous operations adequately guarded?
- Are lockout procedures used for machinery deactivation as required?
- Is the worker wearing clothing or jewelry, or have long hair that could get caught in the machinery or otherwise cause a hazard?
- Are there fixed objects that may cause injury, such as sharp edges?
- Is the flow of work organized (e.g., Is the worker required to make movements that are too rapid)?
- Can the worker get caught in or between moving parts?
- Can the worker be injured by reaching over moving machinery parts or materials?
- Is the worker at any time in an off-balance position?
- Is the worker positioned to the machine in a way that is potentially dangerous?
- Is the worker required to make movements that could lead to or cause hand or foot injuries, or strain from lifting the hazards of repetitive motions?
- Can the worker be struck by an object or lean against or strike a machine part of object?
- Can the worker fall from one level to another?
- Can the worker be injured from lifting or pulling objects, or from carrying heavy objects?
- Do environmental hazards (dust, chemicals, radiation, welding rays, heat, or excessive noise) result from the performance of the job?

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Identify Hazards

Repeat the job observation as often as necessary until all hazards have been identified. Figure 2 shows basic job steps for grinding iron castings and any existing or potential hazards.



Figure 2. Grinding Castings: Hazards

1. Strike hand on edge. 2. Strike hand 3. Strike hand of metal box or against wheel. against metal box casting; cut hand Flying sparks, or castings. on burr. Drop dust, or chips. Wheel breakage. casting on toes. Not enough of wheel guarded. Page 11

No dust removal system. Sleeves could get caught in machinery.

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After you have listed each hazard or potential hazard and have reviewed them with the employee performing the job, determine whether the job could be performed in another way to eliminate the hazards, such as combining steps or changing the sequence, or whether safety equipment and precautions are needed to control the hazards. An alternative or additional procedure is to videotape the worker performing his or her job and analyze the job procedures.

If safer and better job steps can be used, list each new step, such as describing a new method for disposing of material. List exactly what the worker needs to know to perform the job using a new method. Do not make general statements about the procedure, such as "Be Careful." Be as specific as you can in your recommendations.

You may wish to set up a training program using the job safety analysis to retrain your employees in the new procedures, especially if they are working with highly toxic substances or in hazardous situations. (Some OSHA standards require that formal training programs be established for employees.)

If no new procedure can be developed, determine whether any physical changes such as redesigning equipment, changing tools, adding machine guards, personal protective equipment, or ventilation will eliminate or reduce the danger.

If hazards are still present, try to reduce the necessity for performing the job or the frequency of performing it.

Go over the recommendations with all employees performing the job. Their ideas about the hazards and proposed recommendations may be valuable. Be sure that they understand what they are required to do and the reasons for the changes in the job procedures.

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Recommending Safe Procedures and Protection

Figure 3 identifies the basic job steps for grinding iron castings and recommendations for new steps and protective measures.



Figure 3. Grinding Castings: New Procedure or Protection

1.

Provide gloves and

2.

Provide larger guard 3.

Provide for removal of

foot protection.

over wheel. Install local exhaust

completed

stock.

system. Provide

safety goggles.

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Instruct worker to wear short or tight-fitting sleeves.

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Revising the Job Safety Analysis

A job safety analysis can do much toward reducing accidents and injuries in the workplace, but it is only effective if it is reviewed and updated periodically. Even if no changes have been made in a job, hazards that were missed in an earlier analysis could be detected.

If an illness or injury occurs on a specific job, the job safety analysis should be reviewed immediately to determine whether changes are needed in the job procedure. In addition, if a close call or near miss has resulted from an employee's failure to follow job procedures, this should be discussed with all employees performing the job.

Any time a job hazard analysis is revised, training in the new job methods, procedures, or protective measures should be provided to all employees affected by the changes. A job safety analysis also can be used to train effectively new employees on the steps and job hazards.

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JOB SAFETY ANALYSIS TRAINING GUIDE

Job Title:	Page: of	JSA No.	Date:	New Revised	
Equipment: Supervisor:		Analysis by:			
Department:	Approved by:				
Required Personal Protective Equipment (PPE):					
JOB STEPS	POTENTIAL HAZARD	5	RECOMMENDED SAFE JOB PROCEDURES		
 Break down the job into its basic steps, e.g., what is done first, what is done next, and so on. You can do this by: 1. Observing the job 2. Discussing it with the operator 3. Drawing on your knowledge of job 4. A combination of the three Record the steps in their normal order of occurrence. Describe what is done, not the details of how it is done. Usually three or four words are sufficient to describe each basic job step. For example, the first basic job step in using a pressurized water fire extinguisher would be: 1. Remove the extinguisher from the wall bracket. 	For each step, ask you accidents could happ doing the job. You ca by: 1. observing the job. 2. discussing it with t 3. recalling past accid 4. a combination of th Ask yourself; can he/s contacted by anything against or come in co anything; could the er in, on, or between any fall; be over exerted; o anything injurious suc radiation, welding ray For example, acid bur	en to the employee in get the answers the operator dents ne three she be struck by or g; could they strike ntact with mployee be caught thing; can they or be exposed to ch as gas, s, etc.?	 safeguards should be provid should the employee do the potential accident, or what s avoid the accident. You can 1. observing the job for lead 2. discussing precautions w operators 3. drawing on your experien 4. a combination of the three Be sure to describe specification and precautions an employed important details. Number of precaution with the same number 	hould they do or not do to get your answers by: ds with experienced job nce e ally the provided safeguards ee must use. Don=t leave out each separate recommended imber you gave the potential) that the precaution seeks to n=t statements to explain as if you were talking to the egs, not your back.	
Trainee's Name:			Training Date:		
Trainer's Name:			Trainer's Signature:		
Four-Step Instruction Completed? Prepare the Worker Trainer's Initials Present the Operation					
Comments:					

GROUP EXERCISE

JOB SCENARIO

Work in groups using the following information to create a JSA. When the class has finished, we will discuss the project.

- CINCINNATI HYDRAULIC PRESS BRAKE IN THE METAL FORMING DEPARTMENT
- THE JOB HAS JUST BEEN SET UP, THESE ARE THE FIRST PIECES OF A 1,200 PIECE PRODUCTION RUN
- ONE WORKER IS REQUIRED TO DO THIS JOB
- THE PRESS BRAKE IS ACTUATED AND SAFEGUARDED BY 2-HAND CONTROLS SECURED TO FRONT OF PRESS BRAKE ABOUT 48 INCHES FROM THE FLOOR.
- ONE PALLET OF BLANKS IS DELIVERED BY HILO, SET ON WORKBENCH ABOUT 40 INCHES HIGH 4 STACKS, 250 BLANKS PER STACK ARE SECURED BY BANDING TO THE PALLET
- THE BLANKS ARE 6 INCH x 12 INCH METAL AND WEIGHT ABOUT 2 POUNDS
- THE OPERATION CONSISTS OF MAKING ONE 90 DEGREE BEND LENGTHWISE IN THE BLANK

- THE DIE FIXTURE HOLDS THE PART SECURELY IN DIE
- FINISHED PARTS ARE STACKED IN A PARTS BIN SET ON THE FLOOR

JOB SAFETY ANALYSIS

Job Title:		Page: 1 of 2	JSA No	Date:	New Revised
Equipment:		Supervisor:		Analysis	s by:
Department:				Reviewe	d by:
Required Personal Protective Equipment (P	PE):				
JOB STEPS	POTE	NTIAL HAZARDS			MENDED OB PROCEDURES

JOB SAFETY ANALYSIS

Job Title:		Page: 2 of 2	JSA No.	Date:	New Revised
Equipment:		Supervisor:		Analysis by:	
Department:		Approved by:			
Required Personal Protective Equipm	ent (PPE)				
JOB STEPS	PO	TENTIAL HAZARI	DS	RECOMMEN SAFE JOB P	DED ROCEDURES
Trainee's Name:				Training Dat	۵.
Trainer's Name:					
				Trainer's Sig	nature:
Four-Step Instruction Completed?	Present the O Try Out Perfor	peration	Trainer's Initials _ Trainer's Initials _ Trainer's Initials _ Trainer's Initials _		
Comments:					

SAMPLE JOB SAFETY ANALYSIS

Job Title: MACHINE OPERATOR	Page: 1 of 2	JSA No. 103	Date: 7-7-00	_x_New Revised		
Equipment: CINCINNATI PRESS BRAKE Supervisor: James Smith						
Department: METAL FORMING	Approved by: Rhonda Ame	Approved by: Rhonda Ames		Analysis by: James Smith and Louis Andres, Operator		
Required Personal Protective Equipment (PPE)): Heavy gloves, Kevlar sleeves,	safety glasses w/side	shields, heavy work boot	(steel toe optional).		
JOB STEPS	POTENTIAL HAZARDS		RECOMMENDED SAFE JOB PROCEDUR	RECOMMENDED SAFE JOB PROCEDURES		
1. Turn on press brake	Inside/outside press b			Good housekeeping; check area is clear of tools, parts, debris. Check flex cords for damage and exposed wiring. Wear PPE.		
2. Test 2-hand controls	Point of operation Crush or amputate Finger, hand		concurrent, anti-tie-d	ctor - single stroke. Test controls- own, anti-repeat, no bridging, protected ation. Test stop control.		
3. Receive parts	Moving Hilo and stationary parts Struck by or crushed between Hilo and Press brake or table		Move out of way whil pinch point.	e Hilo is delivering parts so body is not in		
4. Cut banding	Sharp edges and release of coiled energy Lacerations Hands, arms, face, eyes		Use proper cutting to	ol.		
5. Discard banding	Sharp edges and long, loose banding Lacerations/trip, fall Hands, arms, face, eyes		Wind up banding and on loose bands.	l deposit into-drum. Observe for tripping		
6. Remove blank from stack	Sharp edges Lacerations, cuts Hands, fingers		Grasp along edges. P	ull blank toward you.		

Job Title: MACHINE OPERATOR	Page: 2 of 2	JSA No. 103	Date: 7-7-00	<u>X</u> New Revised		
Equipment: CINCINNATI PRESS BRAKE	Supervisor: James	Smith	Analysis by: James S	Analysis by: James Smith		
Department: METAL FORMING	Reviewed by: Jane Martin					
Required Personal Protective Equipment (PPE): shield (steps 4 and 5).	Heavy gloves, Kevlar s	sleeves, safety glasses w/si	ide shields, heavy work l	poot (steel toe optional, face		
JOB STEPS	POTENTIAL HAZARDS		RECOMMENDED SAFE JOB PROCEDURES			
7. Put blank in fixture	Same as #6 Part can fall from f	ixture	Locate securely in fixture			
8. Actuate press brake	Point of operation, struck by metal debris Amputation, lacerations Fingers, hands, eyes		Use 2-hand control safeguards to actuate			
9. Remove formed part	Same as #6		Same as #6	Same as #6		
10. Place part in bin on floor	Bending to floor level, handling metal parts Strain, sprain, cuts, lacerations Back, shoulder, fingers, hands		Use safe lifting techniques. (See Comments) (Short-term solution until work station is adapted according to good ergonomic guidelines)			
Trainee's Name:			Training Date:			
Trainer's Name:			Trainer=s Signature:			
Four-Step Instruction Completed? Prepare the Worker. Trainer's Initials Present the Operation Trainer's Initials Try Out Performance. Trainer's Initials Follow Up Trainer's Initials						
Comments: Refer to Safe Back Training module.						

SAMPLE JOB SAFETY ANALYSIS GRINDING CASTINGS

STEP	HAZARD	CAUSE	PREVENTIVE MEASURE
1. Reach into right box and select casting	Strike hand on wheel	Box is located beneath wheel	Relocate_and select casting side of wheel
	Tear hand on corner of casters	Corners of casters are sharp	Require wearing of leather gloves
2. Grasp casting, lift and position	Strain shoulder/elbow by lifting with elbow extended	Box too low	Place box on pallet
	Drop casting on toe during positioning	Slips from hand	Require wearing of safety shoes
3. Push casting against wheel and grind burr	Strike hand against wheel	Wheel guard is too small	Provide larger guard with tongue guard and work rest
	Wheel explodes	Incorrect wheel installe	d Check rpm rating of wheel
		Cracked wheel	Inspect wheel for cracks
	Flying sparks/chips	Wheel friction	Require wearing of
		with caster	eye goggles
	Respirable dust		
	Respirable dust Sleeves caught in machinery	with caster Dust from caster metal and wheel	eye goggles Provide local

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SAMPLE JOB SAFETY ANALYSIS

JOB TITLE (AND NUMER IF APPLICABLE) STOCK LOADING	DATE: 1-1-95	NEW REVISED	
TITLE OF PERSON WHO DOES JOB: LOADER	SUPERVISOR: JAMES SMITH	ANALYSIS BY: JAMES SMITH	
COMPANY/ORGANIZATION: METAL FABRICATING CORP.			REVIEWED BY: JOHN MARTIN
REQUIRED AND/OR RECOMMENDED PE GLOVES, SAFETY SHOES, SAFETY GLASSES,			APPROVED BY: JOE BOTTAN
SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	RECOMMENDED ACT PROCEDURE	ION OR
1. REMOVE BOX FROM CONVEYOR AND PLACE ON TRUCK.1a. HEAVY BOXES & IMPROPER HAND PLACEMEN OR HANDLING METHOD. (MASHED FINGERS, HIT ELBOWS, STRAINS).		1a. USE PALMAR GRIP, GRASP BOTTOM WITH ONE HAND ON BOTTOM FRONT CORNER AND OTHER HAND ON TOP OPPOSITE CORNER OF OTHER END. KEEP ONE ELBOW INTO SIDE. TURN BODY INSTEAD OF TWISTING.	
1b. SPLINTERS (PUNCTURES).		1b. WEAR GLOVES.	
1c. HEAVY BOXES, POOR GRIP, & IMPROPER SHOES (FOOT INJURIES).		1c. WEAR HARD TOE	SHOES.
1d. UNGUARDED V-BELT (HAND INJURIES).		1d. GUARD V-BELT W AND KEEP IN PLA	
	1e. TRUCK PARKED TOO CLOSE OR TOO FAR FROM WORK AREA.(STRAINS, BOXES CROPPED ON FEET, (SLIPS/TRIPS/FALLS).	NOT REQUIRED T AND SO THAT YO	SO THAT YOU ARE O TWIST THE BODY U HAVE ENOUGH TO AVOID BUMPING

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JOB SAFETY ANALYSIS

<u>SAMPLE</u>

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JOB TITLE (and number if applicable): STOCK LOADING	PAGE <u>2</u> OF <u>4</u> JSA NO. <u>103</u>	DATE: 1-1-95	<u>X</u> NEW REVISED
TITLE OF PERSON WHO DOES JOB: LOADER	SUPERVISOR: JAMES SMITH	ANALYSIS BY: JAMES SMITH	
COMPANY/ORGANIZATION: METAL FABRICATING CORP.	PLANT/LOCATION: CHICAGO	DEPARTMENT: PACKAGING	REVIEWED BY: JOHN MARTIN
REQUIRED AND/OR RECOMMENDED PI GLOVES, SAFETY SHOES, SAFETY GLASSES,		IT:	APPROVED BY: JOE BATTON
SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	RECOMMENDED ACTION	OR PROCEDURE
CONT=D FROM PAGE 1.	1f. OBJECTS ON FLOOR. (SLIPS/TRIPS/FALLS).	1f. OBSERVE AREA FOR AND TRIPPING HAZA	
2. PUSH LOADED TRUCK.	2a. OVERLOADED TRUCK & WORN CASTERS (STRAINS WHILE (PUSHING).	2a. IF TRUCK WILL NOT USING BODY WEIGH POWERED EQUIPME REMOVE PART OF LO SECURE ASSISTANC	it against it, get ent, dad, or
	2b. HANDS ON SIDE OF TRUCK.	2b. KEEP HANDS ON EN	ID OF TRUCK.
	2c. PULLING TRUCK (RUN OVER FOOT).	2c. PUSH, NEVER PULL.	
	2d. BOXES STACKED TOO HIGH & UNBALANCED. (FOOT INJURIES).	2d. STACK BOXES ORDE HIGHER THAN NORI LEVEL.	
	2e. OBJECTS ON FLOOR. (SLIPS/TRIPS/FALLS).	2e. OBSERVE FOR SLIP TRIPPING HAZARD V TRAVELING.	

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