North Carolina Department of Labor
Division of Occupational Safety and Health

Raleigh, North Carolina

Field Information System Operational Procedure Notice 133A

***Subject*:** Special Emphasis Program for Wood Products, Furniture and Related Products Manufacturing Injury and Illness Reduction

A. Purpose.

This Operational Procedure Notice (OPN) establishes and implements a special emphasis inspection program that provides guidance to Compliance Safety and Health Officers (CSHOs) for conducting inspections targeted by this OPN. This OPN applies to employers within industries in the North American Industry Classification System (NAICS) Subsectors 321 and 337.

This OPN also enables the CSHOs, in some instances, to limit the scope of inspections to those hazards that have been identified in recent compliance inspections. This document provides supplementary procedures beyond standard inspection protocol set forth in the OSHNC Field Operations Manual (FOM).

B. Scope.

This OPN applies to all assignments included in this special emphasis inspection program and is effective until cancelled by the Director.

C. Discussion.

The targeting program utilizes industry- and establishment-specific employer based on data collected annually by the Bureau of Labor Statistics (BLS) and other available data sources. Those employers in NAICS Subsectors 321 and 337 with high Days Away, Restricted, or Transferred (DART) rates are those that may be targeted for inspection.

D. Objectives.

This special emphasis inspection program sets the targeting priority of inspections of industries in NAICS Subsectors 321 and 337. The most recently published BLS data for North Carolina, obtained from Table 6 of BLS North Carolina, indicates that the current (2004) Total Case (DART) rate for all industries, including State and local government, is 2.1. The DART rate in NC for NAICS Subsector 321 is 3.3, and for NAICS Subsector 337 is 3.2. Employers with DART rates higher than the NC Total DART rate of 2.1 are considered high rate industries, and a reduction in injury and illness rates within targeted NAICS Subsectors will likely contribute to a reduction in the overall DART rate for the

state of North Carolina. Employers controlling 10 or fewer employees will not be included in this targeting system, but could still be assigned for inspection as a result of an accident, complaint or referral.

E. Inspection Procedures and Guidelines.

1. Inspections conducted under this plan will be comprehensive programmed safety and health inspections as defined by the Compliance Operations Manual and conducted in accordance with the procedures described there and in other guidance documents. Targeted inspections under this inspection program shall receive the same inspection priority as Programmed Inspections under other OSHNC Special Emphasis Programs (SEP) and initiatives including; Health Hazards, Long Term Care, Logging and Tree Felling Fatality Reduction, Construction Fatality Reduction, Public Sector, Fatality Reinspections and SST inspections. Consultation deferrals shall apply to sites selected for inspection under this OPN.

2. Once an inspection is planned, the Supervisor should insure the development of an intervention strategy to address those safety and health problem areas identified through review of employer or industry specific data. Included in the appendices of this OPN are Industrial Data Reports (IDRs) for several of the targeted NAICS Subsectors (formerly SICs 2420, 2511, 2512, and 2514). CSHOs should use the information in the appendices of this OPN to assist with the identification of hazards in the relevant NAICS Subsectors.

3. When a site is targeted for either a safety only or health only inspection and the CSHO determines that both safety and health hazards are present, a joint inspection is preferred, but referrals may be considered when a joint inspection is not possible. Inspections under this plan may also be conducted either as one combined safety and health inspection by a cross-trained Compliance Officer (as established through specific training or demonstrated ability), or as separate safety and health inspections.

4. **Focused Inspection Exemption.**

   a. A focused inspection may be conducted if a site is determined to have an effective safety and health program (as defined below, in Paragraph 4.b.), including a designated person/committee responsible for and capable of implementing the program/plan **AND** the site's DART rate is less than or equal to the State Total DART rate (**2.1** for 2004) as determined by the CSHO's review and calculation of data found on the **2004** OSHA 300 log (see Paragraph 4.d.).

      If a focused inspection is to proceed, a partial walkthrough will be conducted and employees will be interviewed in order to confirm and verify the effectiveness of the safety and health program. Any serious

violations that are observed in the vicinity or brought to the attention of the Compliance Officer shall be investigated and cited as appropriate. If all of these conditions are met, the CSHO shall initiate a focused inspection pursuant to the following guidelines. If all of the above conditions are not met or records are not available for Compliance Officers to make this determination, the comprehensive workplace safety and health inspection will proceed and appropriate citations shall be considered.

b. **Evaluation of the Safety and Health Program.** The compliance officer shall evaluate and document the safety and health program in effect at the site using the following criteria and minimum requirements:

i. Comprehensiveness
Confirmation that the program is comprehensive in scope entails an overall evaluation of the features of the program and the physical characteristics of the site. The site's safety and health program/plan must address the full range of hazards normally encountered at sites of the type being inspected (review applicable Industrial Data Reports, if available).

ii. Safety and Health Training Program
Evaluate the need for and effectiveness of any specialized or trade-specific safety and health training programs applicable to conditions at the site. Factors to be considered include the need for special training in view of unique conditions/hazards likely to be encountered at the site as well as specific requirements for such ongoing or periodic training/retraining of employees.

iii. Communication
Employees must be aware of and have access to the services alleged to be provided through the site's safety and health program/plan. The employer must provide evidence showing how the program is communicated to employees and contractors (e.g., oral instruction, booklets, memoranda, posters, safety meeting minutes/attendance rosters, etc.). The CSHO should consider whether the employer holds safety meetings, their frequency, and who conducts them (e.g., plant manager, line supervisors, safety director, etc.). The CSHO should evaluate the effectiveness of the safety and health program/plan through employee interviews.

iv. Investigations
Evaluate the employer's efforts to make accident/injury/illness investigations and determine if corrective actions are taken as a result.

v. Enforcement
Safety and health rules must be enforced. Identify the principal enforcement methods used (e.g., warnings, written reprimands, disciplinary action, discharge, etc.), and the effectiveness of these methods as applied at the site.

c. **Conduct of the Focused Inspections.**

i. The Focused Inspection, for programmed inspections, will begin after a determination is made that the site qualifies as set forth in Paragraph 4.a. of this OPN. The walk around will include the site's safety representative and employee representative according to existing policies for conduct of inspections. The site shall be evaluated, concentrating on: 1) the applicable hazards, as referenced in Appendix A; 2) the site's safety and health program/plan; and 3) serious hazards observed by the CSHO(s). If conditions observed on the project indicate that the site's safety and health program/plan is not effective as initially determined, the CSHO may immediately terminate the Focused Inspection and conduct a comprehensive inspection. The discovery of serious violations during a Focused Inspection does not automatically convert the Focused Inspection into a comprehensive inspection - the CSHO(s) conducting a Focused Inspection is not required to inspect the entire site. Only a representative portion of the project need be inspected.

ii. On sites where unprogrammed inspections are being conducted (complaints, referrals or accidents), Focused Inspections will be conducted where expanding the scope of the inspection is allowed and conditions at the assigned site meet the criteria in this OPN and after the complaint, referral or accident has first been addressed and with supervisory approval.

iii. Focused inspections shall concentrate primarily on the site's safety and health program/plan, and the applicable industry hazards, as noted in Appendix A. However, during the course of the focused inspection, violations shall also be proposed for any serious violations observed and for any other-than-serious violations which are not immediately abated during the walk around. Other-than-serious violations which are immediately abated shall not be cited, but will be noted in the case file (narrative) by the CSHO.

iv. A brief justification will be included in each case file as to why a Focused Inspection was or was not conducted.

d. The DART rate (includes Lost Workdays and Days of Restricted Work Activity and Transfer to another job) will be calculated as follows:

***Total DART Rate**:
DART Rate = [N / EH] x 200,000
N = total of columns H and I on the OSHA 300 log,
EH = total number of employee hours worked for a calendar year, and **200,000** = base of working hours for 100 full-time equivalent employees.

G. Recording and Tracking.

1. For all SEP inspections assigned via the OSH Targeting System web page, the OSHA-1 forms must be marked as "programmed planned" (NCR Item 24). For all unprogrammed inspections conducted in conjunction with this SEP, the OSHA-1 forms must be marked as "unprogrammed" (NCR Item 24) with the appropriate unprogrammed activity identified.

2. In addition, OSHNC will code the OSHA-1 Strategic Plan Activity (NCR Item 25f) with the value **"NAICS 321/337"**.

H. Managing the Inspection Assignment List.

1. The Planning, Statistics and Information Management Bureau (PSIM) will provide each District Office with an inspection assignment list, for this SEP, via the OSH Targeting System webpage of eligible sites.

2. The Assignment cycle size (number of assignments on this SEP assignment list) will be based on consideration of available resources, competing strategic priorities, geographic range of the office, and the number of employers in this SEP database. Within a list, the establishments may be scheduled and inspected and in an order that makes efficient use of available resources. When a list is completed, the District Office may request a new list through their respective Bureau Chief. All of the establishments in a Cycle must either be inspected or removed from the list by the staff in the Planning, Statistics and Information Management Bureau before any establishments on a new list may be inspected.

3. Compliance Bureau management shall determine the appropriate strategy for meeting inspection activity levels in each area of strategic focus.

4. Compliance Supervisors along with the Compliance Bureau Chiefs will be responsible for making recommendations regarding establishments on **the** Assignment Cycle list that should be skipped or deleted from the current list of sites planned for inspection. For example, establishments that have received a recent comprehensive safety and health inspection may be skipped or deleted from the current inspection assignment list/cycle. Supervisors will document in

the comments column of the targeting page the reason why an establishment was skipped or deleted. All requested changes to this targeting schedule must be in writing to the PSIM Bureau.

I. Administration.

The Targeting Program set forth in this operational procedure notice will be administered through the PSIM Bureau.

J. Effective Date.

This OPN is effective on the date of signature. It will remain in effect until revised or canceled by the Director.

Signed on Original
Kevin Beauregard
Assistant Director

Signed on Original
Allen McNeely
Director

3/14/06
Date of Signature

Appendix A

The following areas of concern have been identified based upon hazards identified by affected industries (e.g., combustible dust, ergonomics), and data from inspections conducted during the period 10/99 – 9/04. Lists of the most frequently cited standards for that period were generated. The top ten standards cited for these five years included violations in most of the following areas. Therefore, based upon the CSHOs professional judgment, these areas should be addressed during the course of a Focused Inspection.

Areas of concern to be addressed during focused compliance inspections of industries in NAICS Subsectors 321 and 337

- Electrical (including classified locations)
- Toxic and hazardous substances (including hazard communication)
- Machinery and machine guarding (including abrasive wheels, woodworking machinery, mechanical power-transmission)
- Hand and portable powered tools and other hand-held equipment
- Hazardous materials (including flammables/combustibles, spray finishing, dipping/coating)
- Materials handling and storage (including powered industrial trucks)
- Fire protection and emergency action
- Personal protective equipment
- Occupational health and environmental controls (including combustible dust, noise, PRCS, ventilation, LO/TO)
- Walking-working surfaces
- Recordkeeping
- Special industries (including sawmills)
- Ergonomics (CSHOs should reference FOM Ch. XVII)

Appendix B

The following data reports are attached below:

1. NC-OSHA INDUSTRIAL DATA REPORT No. 24-1.
   SUB-GROUP: Saw Mills and Planing Mills, SIC 2420.

2. NC-OSHA INDUSTRIAL DATA REPORT No. 24-2.
   SUB-GROUP: Plywood and Veneer, SIC 2432.

3. NC-OSHA INDUSTRIAL DATA REPORT No. 25-1.
   SUB-GROUP: Upholstered Household Furniture, SIC 2512.

4. NC-OSHA INDUSTRIAL DATA REPORT No. 25-2.
   SUB-GROUP: Wooden Furniture (case goods), SIC 2511.

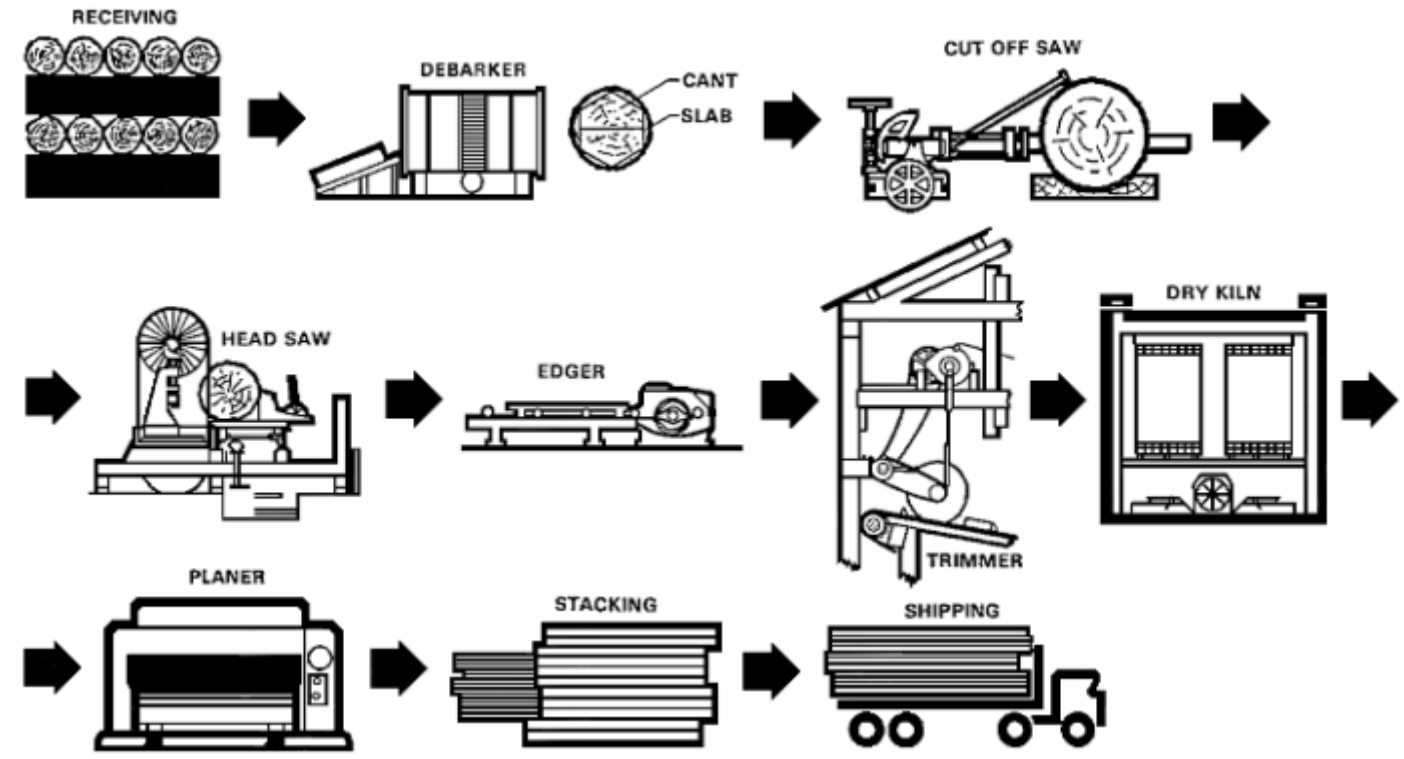
5. NC-OSHA INDUSTRIAL DATA REPORT No. 25-3.
   SUB-GROUP: Metal Furniture, 2514.

NORTH CAROLINA DEPARTMENT OF LABOR	No. 24-1
OSH DIVISION	Date: 15Oct05
OSHNC INDUSTRIAL DATA REPORT	Pages: 4

Industry: **Lumber and Wood Products**	Sub-Group: **Saw Mills and Planing Mills**
SIC: **2421**	NAICS: **321113, 321912, 321918, 321920 and 321999**

PROCESS DESCRIPTION: After the logs have been received on the storage yard they are transported to the mill and debarked. Following the removal of slabs, the head saw cuts the remainder into cants. The cants may then go to a resaw for further cutting or go directly to the edger. The purpose of the edger is to rough cut to the desired size (later the lumber may be dressed). After being edged the lumber continues via chain or belt conveyor to the trimmer where it is cut to the most usable lengths (usually 6′, 8′, 10′, 12′, 16′ and 18′). From the trimmer or trim saw the lumber may be dipped into a chemical solution to prevent it from turning blue (keeping logs wet by water spray in log storage yard also accomplishes this purpose). The lumber is graded before being dipped and then sorted into piles by length and grade. If lumber is to be kiln dried, it is stacked and placed in a kiln. If air dried, it is stacked and placed on the yard. The drying process may take from twelve to sixty hours, depending on the desired moisture content. The lumber is still rough at this point and, if it is to be dressed on one or both sides, it is sent to the planer. With this accomplished, the finished lumber is again graded, cut to desired length, stacked, packaged and shipped or stored.

PROCESS FLOW:



NORTH CAROLINA DEPARTMENT OF LABOR	No. 24-1
OSH DIVISION	Date: 15Oct05
OSHNC INDUSTRIAL DATA REPORT	Pages: 4

Hazards Analysis

Major Hazards			Other Hazards		
Location	**Item**	**Hazard**	**Location**	**Item**	**Hazard**
Log storage	Logs in piles and stacks	Crushed limbs and/or body	Resaw	Resaw, infeed rolls and guides, roll cases, chain conveyor, cants and lumber	Amputations, lacerations, crushed and bruised limbs, eye injuries, slips and falls
Debarker	Log deck chain conveyors, log flipper, pike pole, peavey, barker, head, log hold down, bark, walkways and steps	Amputations, lacerations, crushed limbs, eye injuries, slips trips, falls, bruises, sprains and strains	Edger	Edger blades, infeed rolls, lumber, chains, sprockets, v-belt drives, roll cases and conveyors, live rolls	Crushed limbs, eye injuries
Head rig	Head saw log carriage track, log deck, cants and slabs, chair conveyors, roll cases, logs, open motors and power	Amputations, lacerations, crushed and bruised limbs, eye injuries, electric shock, slips trips and falls	Planer	Planer, conveyors, live rolls, pineapple and pressure rolls, planer knives, power transmission gear	Amputations, lacerations, slips and falls
Trim saw	Trim saw blades and chain conveyor	Amputations, bruises, lacerations, eye injuries, slips, trips, falls, sprains and strains	Kiln	Control room, steam lines, power transmission gear, floors, stair rails Entry doors	Burns, crushed limbs, slips and falls, bruises, sprains and strains Entrapment
Chipper	Chipper knives, conveyors, roll conveyors, slabs, cants, waste	Lacerations, punctures, bruises, slips, trips falls, eye injuries, strains and sprains	Shipping and receiving	Forklifts Hoists	Carbon monoxide and crushed and bruised limbs and body Bruises, lacerations and accidents

Planer infeed	Planer conveyors, unstacked infeed and pineapple roll, cutting knives and heads, and live rolls	Crushed, cut and bruised limbs, eye injuries, slips, trips and falls			
Throughout	Noise Wood dust	Hearing loss Respiratory problems			

Key OSHNC Standards

Reference	29 CFR 1910 — General Industry Standards
ANSI B30.6	Overhead underhung hoists
NCGS 95-129	General duty clause – ergonomics
Subpart D	Walking and working surfaces – where 1910.265 does not apply
Subpart E	Exit Routes, Emergency Action Plans, and Fire Prevention Plans – where .265 does not apply
Subpart I and 13 NCAC 7F.0101	Personal protective equipment (PPE) – federal and state-specific requirements (for 1910.132)
Subpart O	Machinery and machine guarding – where 1910.265 does not apply
Subpart S	Electrical – where 1910.265 does not apply
1910.95	Occupational Noise Exposure
1910.141	Sanitation
1910.146	Permit-required confined space entry
1910.147	Control of hazardous energy (lockout/tagout)
1910.176	Material handling – general requirements
1910.178	Powered industrial trucks
1910.265	Sawmills
1910.1000 13 NCAC 7F.0101	Air contaminants (federal and state specific PELs)
1910.1200	Hazard communication

Inspection Analysis

The inspection should begin with the log storage yard. Ensure that logs are properly stacked with no tilting of piles and that base logs are secure. Proceed to the log handling process and equipment. Inspect log handling equipment to ensure the use of positive devices to prevent uncontrolled lowering: limit switches to prevent lift arms from traveling too far, operator protection, audible signaling devices and lights. In the debarker area, observe the operator for protection from flying bark, chips, etc. and for unguarded foot treadles in cab. Look for

unguarded power transmission equipment around the log deck, stair rails to cab and standard rails around log deck and platform, if required. Observe conveyors, chains, log deck and log haul. Ensure that the log haul has a standard rail if it has a walkway and ensure that the chain drive mechanism is guarded. Observe the barker; check type and note whether hold down rolls and baffles are installed, if required.

In the saw mill, begin with the head-rig (sawyer). Check for log stops on deck to prevent logs from going into carriage or runway, and ensure carriage way is provided with bumpers. Check safety guides on circular saws and enclosures if band head saw is used. Chain conveyors, mechanical power transmission equipment, safe access to sawyer position, open motors, floor holes, uneven floors, walkways over conveyors, etc., must also be observed. Observe sawyer and slab puller operators for use of personal protective equipment.

From head rig, go to resaw position, then to the edger and trim saw area. In each section, observe the operator at each position. Note the equipment and how the operator gets to machine; i.e., over/under conveyors, roll cases, live rolls, bind corners, etc. Observe equipment guards and anti-kickback devices. In trim saw area, check for guards on end saws and across back of unit, and for baffle in front.

Determine the noise level at each operator position within the mill.

In the planer mill an enclosed planer will be less of a noise hazard. In general, observe employees for exposure to unguarded conveyors, chains and sprockets, live rolls, hold down rolls and pineapple. For the trim saw in the planer mill, the inspection is the same as the saw mill.

If the mill has a kiln, check for proper egress from the kiln, and, in the control room, inspect for live steam pipes. Check for proper guarding on exposed v-belt drives and fly wheels for compressors. As most control rooms are upstairs and at the rear of the kiln, note stair rails and condition of floor (usually wet and damp and sometimes rotten).

Other positions in the saw mill and planer mill that require checking include the kiln loader, mechanic, millwright, electrician, welder and shop.

In all machine centers throughout mill, check for lockout/tagout procedures.

Other Pertinent Comments:

	NORTH CAROLINA DEPARTMENT OF LABOR	**No. 24-2**
	OSH DIVISION	**Date: 15Oct05**
	OSHNC INDUSTRIAL DATA REPORT	**Pages: 5**

Industry: **Lumber and Wood Products**	Sub-Group: **Plywood and Veneer**
SIC: **2435 and 2436**	NAICS: **321211 and 321212**

PROCESS DESCRIPTION: The first few phases of plywood or veneer production are essentially the same as that from almost any other sawmill. The logs are received, debarked and cut on headsaws in the same manner. In most cases, however, cants or lumber are not cut. For veneer (fine or high grade hardwood), if the log is 32 inches or less in diameter it is cut into halves; if over 32 inches it is generally cut into quarters. If logs are small and intended for plywood only, they will not be cut by headsaw but bucked into length and go directly to a steam or hot water vat or tank for cooking.

In veneer production the logs are placed in a cooking vat which is approximately ten feet deep and eight feet by 20 feet. The temperature is raised 5-10 ºF per hour until it reaches approximately 140 ºF where it is held for 24 hours, then up to 200-220 ºF where it remains for from one to five days depending on color desired. The "flitch", as it is now called, is removed from the cooking vat, cleaned, planed and ends trimmed or cut off. Then a backing board is applied by glue. (This operation allows more veneer to be cut from a single flitch). Once backing board is applied with glue or cement it is placed in a flitch press to secure a proper bond. The flitch is placed in a holding tank of splashing hot water. The tank is approximately 25½ inches deep. When ready to be cut, the flitch is placed on a "Stay-Log Table". The cutting knife is set in position in a frame approximately 45 inches above the work platform. The knife is stationary and the Stay-Log table moves up and down to cut or slice veneer. The tables make approximately 70 strokes per minute and cut a 12 foot slice. From here the veneer is moved to the sweat or holding room where it remains until the desired color is reached. Forklift trucks move veneer out of the sweat room to the dryer where it is hand fed into the jet or fan dryer. A conveyor carries the veneer through at a speed of 8-15 feet per minute and at a temperature of from 90 to 120 ºF. After drying it goes to the clipper, then it is packaged and stored or shipped.

If plywood is to be made, the logs are debarked and cut into 8-10 foot lengths referred to as blocks. The blocks are steamed to soften the wood fibers. The time and temperature requirements will vary according to wood species and desired depth of heat penetration. This process is generally of a shorter duration than with pure veneer production. When this softening process is properly performed, the resultant benefits can be smoother veneer with a reduction of checking or fracturing of wood fibers, all of which are assets in the latter stages of plywood manufacturing. The most common method of producing veneers (or plies) is by rotary cutting on a lathe. Rotary lathes are equipped with chucks attached to spindles and are capable of revolving. Large blocks are moved to the lathe charges. Their purpose is to position blocks to receive the lathe chucks. The blocks are chucked either in their geometric center or the heart center of the block. After the block is in place the chuck revolves the block against the knife and the veneer "peeling" begins. The thickness of the veneers will range from 1/16 to ¼ inch and the mill will usually seek to produce a standard thickness for the plywood they are producing. Softwood blocks are cut at high speed and veneer coming from the lathe is fed into a belt conveyor. The number and length will vary from mill to mill. Positioned along the belt conveyor are rotary clippers that cut the veneer to desired size. This operation takes place along the "Green chain."

From the "green-end" the veneer goes to dryers much as in the pure veneer production. Some direct-fired dryers have temperatures up to 500 ºF. Most common maximum temperature is less than 400 ºF. The dry veneer is graded and stored according to the width and grade. After drying, the plywood is built by placing each layer, or ply, at right angles to the grain of the core. This cross-lamination produces strength and rigidity. Plywood is constructed with an odd number of plies such as 3, 5, 7, 9, 11, etc. Prior to laying up of the layers, each ply is run through a glue or adhesive spreader. After the glue is applied and the layers stacked, the plywood is placed

into presses. Here, pressure (170-2,000 psi) and high temperature are applied for 12-15 minutes. The wood panels are then removed, cut to size (usually four feet by eight feet) and then sanded and stored or shipped.

PROCESS FLOW:

Veneer Mill

Log Storage Yard
↓
Debarker
↓
Head Saw
↓
Cooking Vat
↓
Flitch Backing, Cleaning and Trim
↓
Veneer Cutter
↓
Sweat Room
↓
Dryer
↓
Clipper
↓
Package and Ties
↓
Store or Ship

Plywood Mill

Log Storage Yard
↓
Debarker
↓
Log Bucking
(Cut to Blocks)
↓
Steam Room
↓
Lathe
(Rotary Cutting)
↓
Clipper
↓
Dryer
↓
Glue Spreader
↓
Lay-Up
↓
Press
(Temperature and Pressure)
↓
Cut to Size
↓
Sander
(Belt or Drum)
↓
Store or Ship

Hazards Analysis

Major Hazards			Other Hazards		
Location	**Item**	**Hazard**	**Location**	**Item**	**Hazard**
Log storage yard	Logs in piles and stacks, forklifts, mechanical lifting devices, cables, binders and unloading trucks; vehicular accidents	Crushed limbs and body; carbon monoxide	Debarker	Log deck, chain conveyor, log flippers, pike pole peavey, barker head, log hold down rolls, flying bark, noise, steps, walkways and foot treadles	Amputations, lacerations and crushed limbs; eyes injuries; slips, trips and falls; sprains and strains
Head rig	Head saw, log carriage track, log deck roll cases, conveyors Open motors and electrical equipment, chips and dust; electric shock, fire and explosion	Amputations, lacerations, bruises, slips, trips, falls, strains and sprains Burns, smoke inhalation and exposure to toxic air contaminants	Veneer slicers and rotary cutters (stay-log table and lathes)	Veneer slicers, blades, carriage, power drive gears, chains, belts and rotary cutter	Amputations, lacerations, bruises, sprains and strains, and crushed limbs
Log bucking or block cutting	Open vats and tanks, live steam lines and outlets, falling “flitches” or “blocks,” walkways, buck boards hoist, slings and cables	Burns to eyes and body; slips, trips and falls; crushed and bruised limbs and body	Clipper	Clipper, knife, power drives, belts and chains, etc.	Amputation, lacerations, bruises, crushed limbs and body
Flitch cleaner/planer and board	Flammable glue, chain saws, flitch	Lacerations and bruises, slips and falls sprains and	Dryer	Heat, open chains, belts and power drives,	Burns, bruises, crushed limbs and body

backing area	planer, hoist, cables, slings or wire rope, buckboards, walkways, hot water and steam floors, fire	strains, burns and smoke inhalation		conveyors; pinch and nip points	
Hot press	Hydraulic hot press, high temperature and pressure (temps. up to 700 ºF and pressure up to 2000 pounds), in-running nip and pinch points	Burns and crushed fingers and hands	Glue spreader	Spreader roll, belts, chains, power drives, doctor roll, conveyor; in-running nip and pinch points Glue vapors and liquid chemicals (formaldehyde)	Crushed fingers and hands Eye and throat irritation, dermatitis and inhalation
Sanding area	Drum sanders and wide belt sanders, belts; in-running nip and pinch points	Eye injuries and crushed fingers and hands	Trim area	Band saws, circular saws	Lacerations, amputations and eye injuries
Throughout	Noise Wood dust	Hearing loss Respiratory problems			

Reference	29 CFR 1910 — General Industry Standards
ANSI B30.6	Overhead underhung hoists
NCGS 95-129	General duty clause - ergonomics
Subpart D	Walking and working surfaces (especially 1910.30 – veneer machinery)
Subpart E	Exit Routes, Emergency Action Plans, and Fire Prevention Plans
Subpart I and 13 NCAC 7F.0101	Personal protective equipment (PPE) – federal and state-specific requirements (for 1910.132)
Subpart O	Machinery and machine guarding
Subpart S	Electrical
1910.95	Occupational noise exposure
1910.106	Flammable and combustible liquid handling and storage
1910.141	Sanitation

1910.147	Control of hazardous energy (lockout/tagout)
1910.151	Medical services and first aid (especially eye wash and emergency shower stations)
1910.176	Material handling – general requirements
1910.178	Powered industrial trucks
1910.242	Hand and portable powered tools and equipment – general requirements
1910.1000 and 13 NCAC 7F.0101	Air contaminants (federal and state specific PELs)
1910.1048	Formaldehyde
1910.1200	Hazard communication

Inspection Analysis

This inspection will be very similar to that of a saw mill. Start with the storage yard and Ensure that logs are properly stacked with no tilting of piles, and that base logs are secure. Check proper log handling procedure and equipment. In the debarker area, observe the operator for protection from flying bark and chips, and check for unguarded mechanical power transmission equipment, walkways, stair rails and log deck. Also look at the drag saw or chain saw. In plywood mills chain saws are often used after debarking to cut logs into blocks. If head rig (head saw) is used, check as you would in a saw mill, with particular emphases on open electrical junction boxes and motors, walkways, guard rails, conveyors, protection against flying particles and log deck guarding. (Note: Remember that even though the equipment and procedures are the same, 29 CFR 1910.265 does not apply to plywood and veneer plants.)

Continue on to the cooking vats or steaming area. Note the manner of handling logs, blocks and flitches (by hoist and sling or forklift). Check depth of vat or tank, cover and walkway height above working level, water temperature, noise and personal protection.

In veneer plants, check the flitch backing area. Check flammable chemical use and storage. Check saws, planers (hand held), holding tanks, water temperature and tank heights. The next area of concern in the veneer plant is the veneer cutter. Ensure that employees are protected from the cutting knife, stay-log table, power drives, belts and chains. In a plywood mill, the lathe is important. There will probably be a pit where the knife is located. Check lockout procedures when changing knives or during maintenance.

In both types of mills observe the chipper operation. Check for in-feed and out-feed guarding, employee protection and proper guards.

The remainder of both plants requires inspection techniques similar to any plant operating equipment with power drives, in-running nip points, gears, presses, belts, saws sanders, rolls and other miscellaneous equipment.

Other Pertinent Comments:

	NORTH CAROLINA DEPARTMENT OF LABOR	No. 25-1
	OSH DIVISION	Date: 15Oct05
	OSHNC INDUSTRIAL DATA REPORT	Pages: 4

Industry: **Furniture and Fixtures**	Sub-Group: **Upholstered Household Furniture**
SIC: **2512**	NAICS: **337121**

PROCESS DESCRIPTION: The manufacture of upholstered furniture includes the use of both wood and metal as basic materials. It also utilizes materials from other industries such as cotton batting, hair, rubberized hair, cotton, shoddy (shredded rags), excelsior, cardboard, metal springs and straps, foam rubber and polyurethane foam and textile upholstery materials. In this data report, only those processes actually involved in the upholstering of furniture are covered.

Prior to the actual upholstering process, several concurrent functions must be performed: those portions of the furniture frame that are intended to remain exposed after the upholstering process, are finished by spraying with stain, varnish and lacquer. The material covering the outside of the finished piece is cut to pattern then sewn into cushion covers and slip-cover like units. The cushion covers are fitted with zippers and some pieces are pleated and seamed into what later becomes ‘kick-pleats” from the bottom of the finished furniture pieces.

The foam rubber or polyurethane foam cushions are cut from bulk, shaped and glued into desired forms and sizes. If the pieces have bottoms on the finished item of furniture, the cushions have 5/8″ to 1″ holes punched into the rubber or foam, to mark the position of and facilitate later installation of the buttons.

The upholstery operation begins with the spring-up/web-up process in which cloth or elastic tape is stapled to the furniture frame. Steel bands or straps and either hand-tied coil springs or stapled “zig-zag springs” are likewise attached. Non-supporting areas of the frame, except the webbed and sprung areas under the seats, are covered with cardboard-like filler panels to support the shape of padding and cushions. These filler panels are also attached by nails or staples.

All padded and cushioned areas of the piece are now completed and the entire piece is covered with the upholstery material. A wide range of design and texture possibilities from brocade and quilted materials to tweed, plaid and course burlap, often treated to attain stain resistance, is used. Areas intended to remain as “exposed wood” are not covered with upholstery. The sprung areas are covered with a pre-fabricated pad to protect the cushions from the springs. This padded area is then covered with either a light (muslin) material or is “self-decked” (covered with the same upholstery material).

Cushions are fitted with their covers and installed on the piece. Ornamental buttons are added at this time.

Finally, the pieces are inspected and any defects on the exposed woodwork or upholstery are removed. The pieces are wrapped in paper padding and boxed in combination cardboard and wood furniture boxes, banded, warehoused and shipped.

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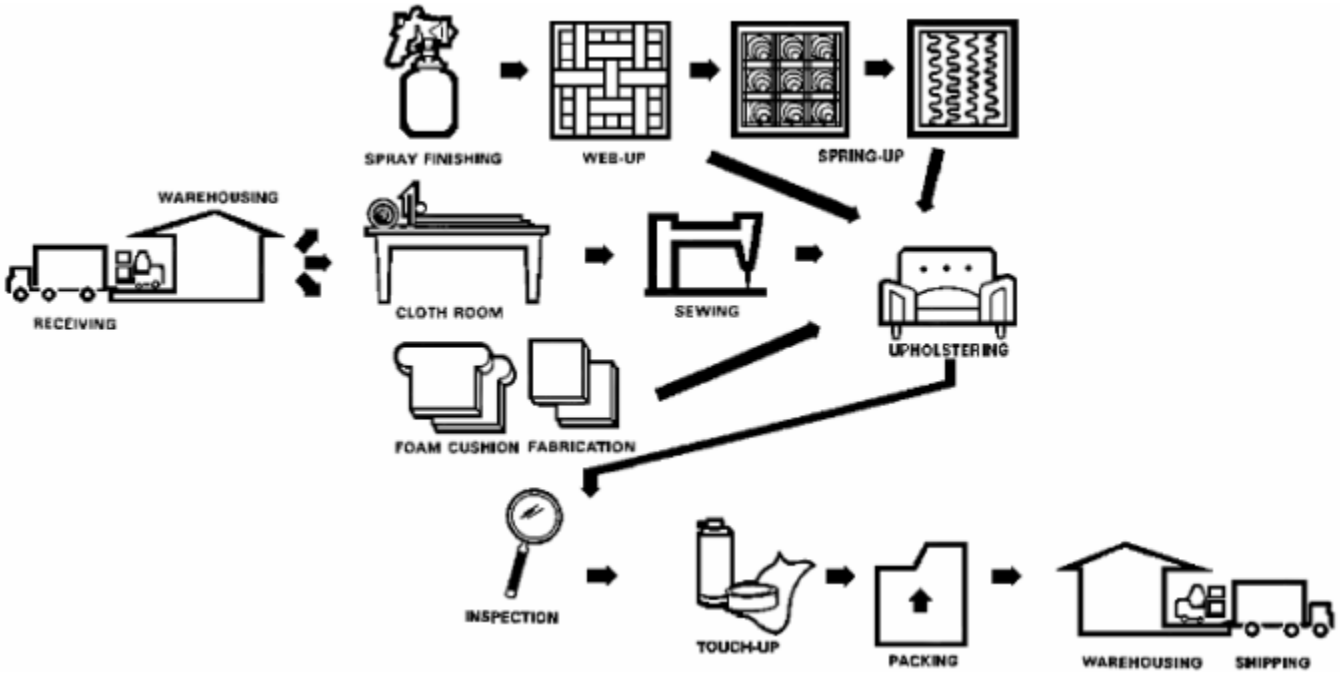
PROCESS FLOW:



Hazards Analysis

Major Hazards			Other Hazards		
Location	**Item**	**Hazard**	**Location**	**Item**	**Hazard**
Receiving area/dock	Open-sided platforms, falls	Broken and bruised limbs and body	Shipping and receiving	Unmarked exits Forklifts and delivery trucks	Delayed evacuation, and smoke inhalation Carbon monoxide; crushed and bruised limbs and body

Warehouse	Materials storage, falling materials due to non-uniform shapes, sizes and weights	Crushed and bruised limbs and body	Cloth room	Housekeeping; fire	Slips, trips and falls; burns and smoke inhalation
Spray finishing	Chemicals, housekeeping, electrical, bonding and grounding, fire and explosion	Exposure to toxic air contaminants; burns	Foam cushion fabrication	Flammable glue, fire and explosion	Exposure to toxic air contaminants; burns
Flammable storage area	Ventilation, chemicals, bonding, grounding, fire and explosion	Exposure to toxic air contaminants, burns	Packing	Staple machines Banding	Punctures to eyes, hands and body Lacerations and bruises
Cloth room	Cutting tools	Lacerations and amputations	Throughout	Unmarked aisles Lifting Housekeeping, fire Noise	Crushed and bruised limbs and body Back strains Slips, trips and falls; burns and smoke inhalation Hearing loss
Sewing room	Sewing machines, unguarded needles	Punctures to hands and body			
Web-up / spring-up	Staple machines, hammers and springs	Bruises and punctures to eyes, hands and body			
Foam cushion fabrication	Cutting tools, unguarded blades Vinyl chloride, organic vapors	Lacerations and amputations Exposure to toxic air contaminants and skin irritation			
Upholstering	Stapling machines, hammers and tacks	Eye and hand injuries and puncture wounds			
Touch-up	Chemicals	Exposure to toxic air contaminants			

Key OSHNC Standards

Reference	29 CFR 1910 — General Industry Standards
ANSI B30.6	Overhead underhung hoists
NCGS 95-129	General duty clause - ergonomics
Subpart D	Walking and working surfaces
Subpart E	Exit Routes, Emergency Action Plans, and Fire Prevention Plans
Subpart I and 13 NCAC 7F	Personal protective equipment (PPE) – federal and state-specific requirements (for 1910.132)
Subpart O	Machinery and machine guarding
1910.94	Ventilation
1910.95	Occupational noise exposure
1910.106	Flammable and combustible liquid handling and storage
1910.107	Spray finishing operations using flammable and combustible materials
1910.141	Housekeeping
1910.147	Control of hazardous energy (lockout/tagout)
1910.151	Medical services and first aid (especially eye wash stations)
1910.176	Material handling – general requirements
1910.178	Powered industrial trucks
1910.1000 and 13 NCAC 7F.0101	Air contaminants (federal and state specific PELs)
1910.1017	Vinyl chloride
1910.1200	Hazard communication

Inspection Analysis

The process flow should be followed as the route of the inspection. While side trips to machine/maintenance ships, compressor rooms and similar non-process areas may be necessary, product flow provides the best possible method for inspection. Inspection of the receiving dock and warehouse may also encompass the shipping areas, eliminating the need for returning. The flammable storage area/room must be inspected in conjunction with or immediately following inspection of the spraying areas/booths. In the cloth room, debris and left-over materials often create tripping/fire hazards. This is also true in the foam cushion fabrication areas. Pressure reduction requirements of compressed air, used for cleaning purposes, warrant close scrutiny in the sewing and foam cushion fabrication areas. In the touch-up areas, the presence of hot surfaces, open spraying of flammable materials and problems of flammable material storage outside the inside storage rooms (open containers, excessive amounts, etc.) must be evaluated. Determine the possibility of vinyl chloride exposure from hot process cutting the vinyl materials and urethane foam and the use of a wide variety of lacquers and thinners in the spraying process, as well as the variety of spray glues used in the fabrication of foam cushions.

In the receiving area of the warehouse(s), the nature of the received material, such as furniture frames of odd sizes of shapes, bolts and rolls of upholstery materials of various sizes of foam materials often create irregular storage.

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Other Pertinent Comments:

SIC: 2512
NAICS: 337121

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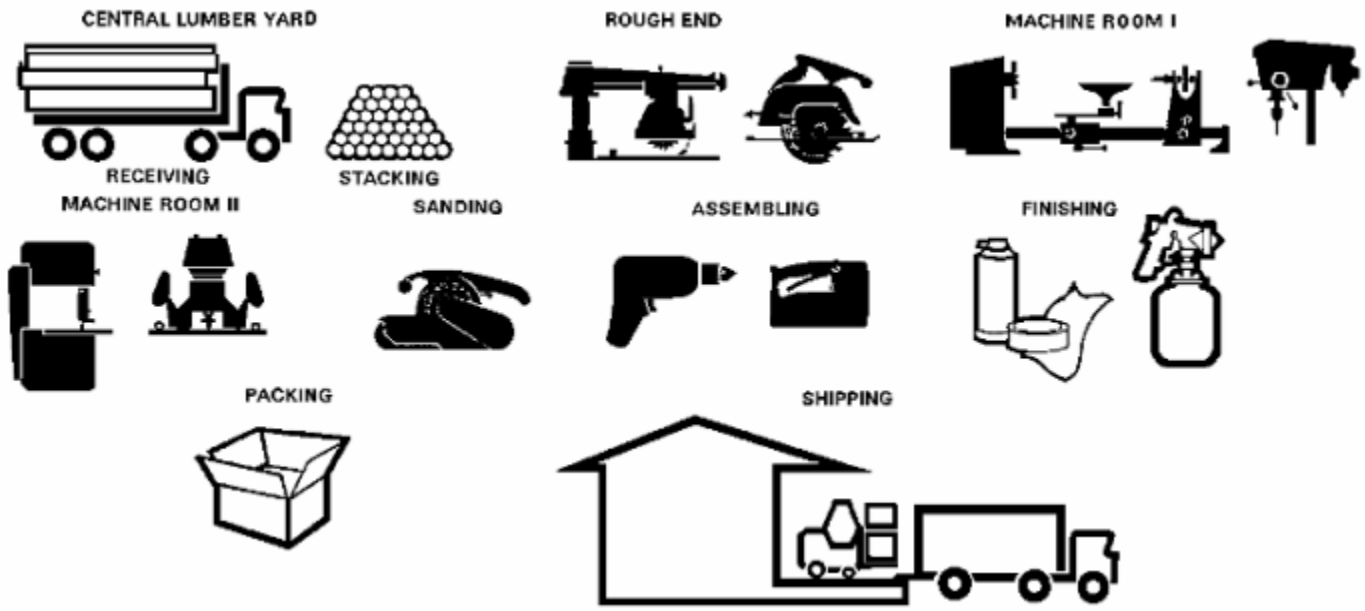
Industry: **Furniture Fixtures**	Sub-Group: **Wooden Furniture**
SIC: **2511**	NAICS: **337122 and 337215**

PROCESS DESCRIPTION: "Case goods" as applied to wooden furniture manufacturing is an industry term for bedroom, dining room and living room furniture covering the entire process spectrum. Some case goods incorporate upholstery. For a description of the upholstery process refer to IDR 25-1. Raw materials are received by truck and/or rail. The process includes inside and outside storage. If rough lumber is received, it is normally kiln dried prior to use.

The manufacturing process normally includes five distinct steps: 1) Rough end – initial cutting and trimming; 2) Machining – shaping, forming and boring individual furniture parts; 3) Sanding – smoothing and shaping rough cuts and preparing surfaces for finishing applications; 4) Assembling – combining and fastening of individual parts into units; and 5) Finishing – application of paints, stains or preservatives (sanding of some degree may be required at any point of the process). After finished furniture units are inspected they are rerouted for touch up as required and packaged and stored or shipped.

PROCESS FLOW:



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Hazards Analysis

Major Hazards			Other Hazards		
Location	**Item**	**Hazard**	**Location**	**Item**	**Hazard**
Storage area	Lumber in stacks	Potential fall and collapse	Finishing area	Spray finishes	Skin irritation, respiratory allergies, inhalation; fire and explosion
Kilns	Kilns	Burns and asphyxiation	Throughout	Flyings, sawdust shavings, flammable materials	Fire and explosion
				Housekeeping	Slips, trips and falls
				Forklifts	Carbon monoxide, and vehicular accidents
				Wood dust	Inhalation and allergic sensitization
				Hoists	Accidents
Rough end, machining and sanding areas	Point of operation as on saws, lathes, tenoners, planers, moulders, routers, shapers, jointers, borers and carvers	Amputations, lacerations, crushed limbs			
Rough end machining, sanding & assembling	Flying particles, nails, tacks, hand tools	Eye and face lacerations			
Throughout	Mechanical power transmission apparatus and conveyor systems	Amputations and crushed limbs			
	Noise	Hearing loss			

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Key OSHNC Standards

Reference	29 CFR 1910 — General Industry Standards
ANSI B30.6	Overhead underhung hoists
NCGS 95-129	General duty clause - ergonomics
Subpart D	Walking and working surfaces
Subpart E	Exit Routes, Emergency Action Plans, and Fire Prevention Plans
Subpart I and 13 NCAC 7F.0101	Personal protective equipment (PPE) – federal and state-specific requirements (for 1910.132)
Subpart O	Machinery and machine guarding (especially 1910.213 – woodworking machinery)
Subpart S	Electrical
1910.94	Ventilation
1910.95	Occupational noise exposure
1910.106	Flammable and combustible liquid handling and storage
1910.107	Spray finishing operations using flammable and combustible materials
1910.146	Permit-required confined space entry
1910.147	Control of hazardous energy (lockout/tagout)
1910.151	Medical services and first aid (especially eye wash and emergency shower stations)
1910.176	Handling materials – general requirements
1910.178	Powered industrial trucks
1910.1000 and 13 NCAC 7F.0101	Air contaminants (federal and state specific PELs)
1910.1200	Hazard communication

Inspection Analysis

The inspection should begin in the receiving area and/or outside storage area, checking especially for powered industrial truck operations, walking-working surfaces and stacking of lumber/furniture parts. Where used, dry kilns must be checked for emergency exits, pits and steam carrying apparatus. Rough end and machining and sanding areas should be carefully checked for proper machine guarding (mechanical power transmission apparatus, points of operation and rotating parts) and noise level. All wiring, motors and other electrical equipment subjected to wood dust must be appropriate for the hazardous location. Assembly areas must be closely checked for portable power tool guarding and operation and for eye and face protection. Finishing area must be checked for air contaminant exposure, storage and handling of flammable and combustible materials and spray booth construction and operation. Electrical equipment in spray areas must be installed per Subpart S – Electrical. Throughout, check for housekeeping, especially heavy accumulations of sawdust and shavings. Check means of egress such as aisle and passageway clearance.

Other Pertinent Comments:

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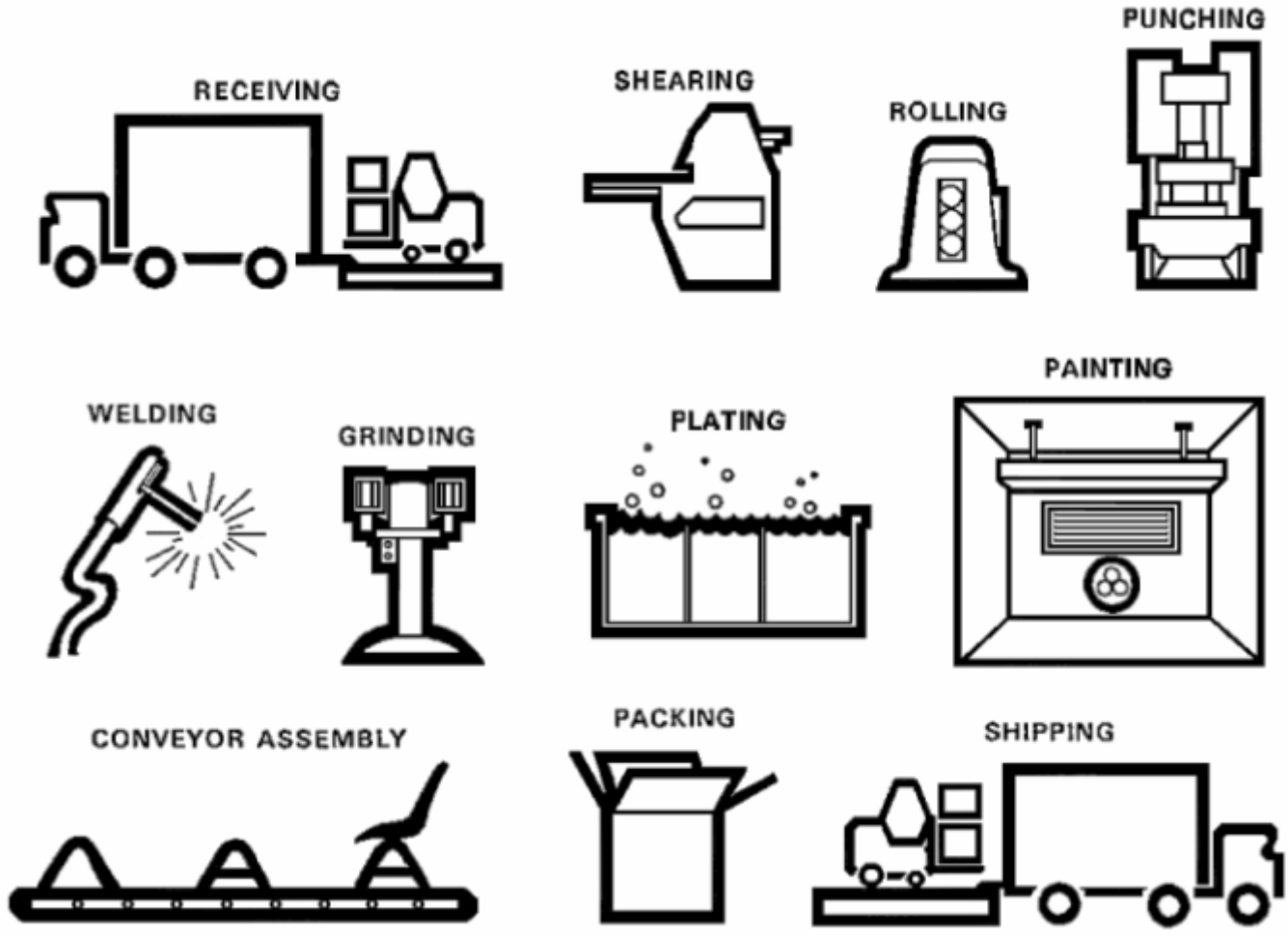
Industry: **Furniture**	Sub-Group: **Metal Furniture**
SIC: **2514**	NAICS: **337121, 337124 and 337215**

PROCESS DESCRIPTION: Raw materials include steel, dye castings, stamping, high pressure laminates, plastic molded parts, wood, fabric, nuts, bolts, screws, plating chemicals, painting and finishes. Metal is sheared to size, punched, notched, stamped, formed and rolled. Succeeding steps include welding (spot welding, arc welding and projection welding), sanding and/or grinding, dip tank plating, painting or spray painting, buffing and assembling. Packaging and shipping complete the process.

PROCESS FLOW:



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Hazards Analysis

Major Hazards			Other Hazards		
Location	**Item**	**Hazard**	**Location**	**Item**	**Hazard**
Machine room	Shears, punch presses, brakes, metal rollers	Finger and hand amputation and crushing	Receiving and shipping areas	Forklifts and vehicular accidents	Carbon monoxide and crushed limbs and body
Plating room	Plating chemicals and tanks	Exposure to toxic air contaminants	Throughout	Heavy materials Noise	Back, foot and toe injuries; strains and sprains Hearing loss
Grinding or sanding room	Sanders, grinders	Eye, face and body injuries from flying debris; inhalation of dust			
Welding shop	Spot and arc welders	Flash burns and welding burns; fume inhalation; welding fume fever			
Spray finishing and dip tank areas	Electrical, bonding and grounding, fire and explosion Chemicals	Burns and smoke inhalation Exposure to toxic air contaminants			

Key OSHNC Standards

Reference	29 CFR 1910 — General Industry Standards
ANSI B30.6	Overhead/Underhung hoists
NCGS 95-129	General duty clause - ergonomics
Subpart D	Walking and working surfaces
Subpart E	Exit Routes, Emergency Action Plans, and Fire Prevention Plans
Subpart I and 13 NCAC 7F.0101	Personal protective equipment (PPE) – federal and state-specific requirements (for 1910.132)
Subpart O	Machinery and machine guarding
Subpart Q	Welding, cutting and brazing
1910.94	Ventilation

1910.95	Occupational noise exposure
1910.106	Flammable and combustible liquid handling and storage
1910.107	Spray finishing operations using flammable and combustible materials
1910.122 - 1910.126	Dipping and coating operations
1910.146	Permit-required confined space entry
1910.147	Control of hazardous energy (lockout/tagout)
1910.151	Medical services and first aid (especially eye wash and emergency shower stations)
1910.176	Material handling – general requirements
1910.178	Powered industrial trucks
1910.1000 and 13 NCAC 7F.0101	Air contaminants (federal and state specific PELs)
1910.1200	Hazard communication

Inspection Analysis

The inspection should follow the process flow beginning where raw goods are received and passing into the machine room, paying particular attention to the shears, presses and other machinery that may require machine guarding or point of operation guarding. Eye protection may also be needed around these machines. Generally, the welding shop is where the inspector must also look for eye protection, welding screens, frayed cables, harmful fumes and possible point of operation guards on lock down type spot welders. The sanding and grinding department is another area where eye protection and guards on sanding belts and abrasive wheels may be needed. The plating room is the next area where various types of personal protective equipment are needed and where electrical requirements exist for hazardous locations (depending upon the plating materials). In the spray paint or dip tank painting area, fixtures, lights, receptacles and wiring must be approved for that location as well as in any adjacent flammable storage area. The inspection would normally terminate in the shipping area.

Other Pertinent Comments: