| | NORTH CAROLINA DEPARTMENT OF LABOR | No. 25-1 |
|---|---|---|
| | OSH DIVISION | Date: 10/2009 |
| | OSHNC INDUSTRIAL DATA REPORT | Pages: 5 |

| 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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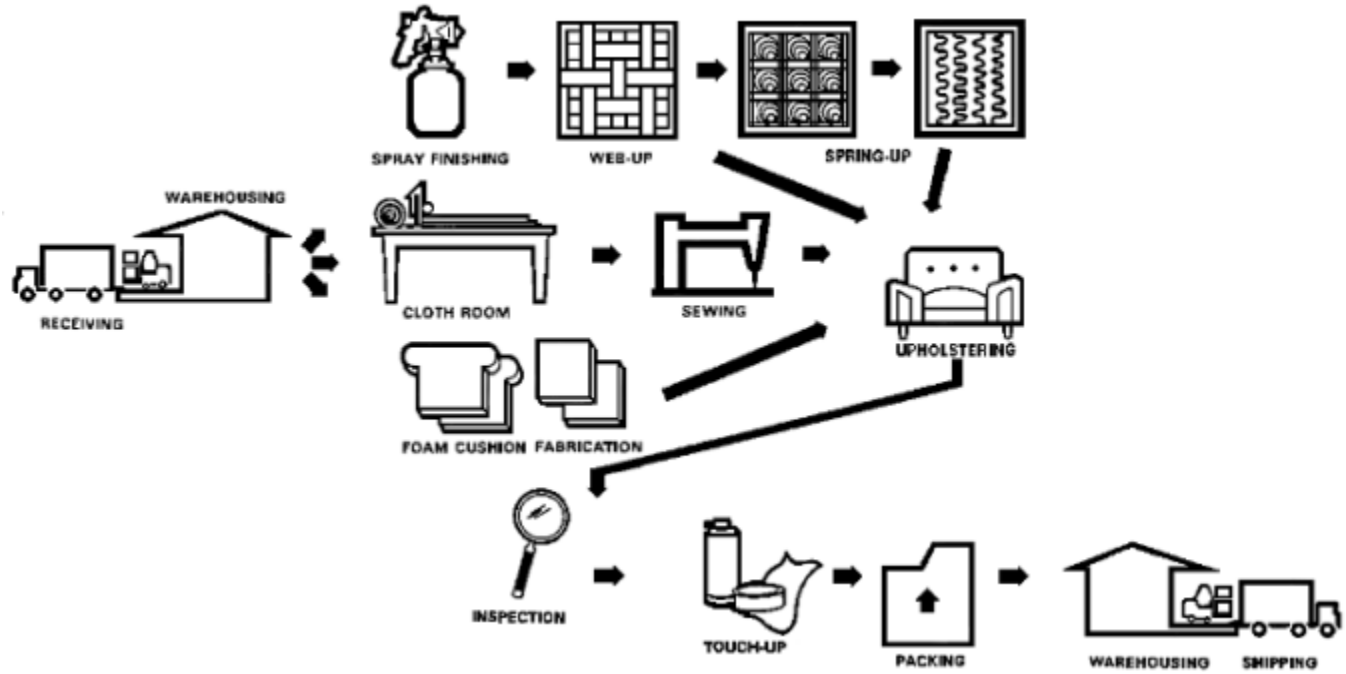
**PROCESS FLOW:**




## 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<br><br>Forklifts and delivery trucks | Delayed evacuation, and smoke inhalation<br><br>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<br>Banding | Punctures to eyes, hands and body<br>Lacerations and bruises |
| Cloth room | Cutting tools | Lacerations and amputations | Throughout | Unmarked aisles<br>Lifting<br>Housekeeping, fire<br>Noise | Crushed and bruised limbs and body<br>Back strains<br>Slips, trips and falls; burns and smoke inhalation<br>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<br>Vinyl chloride, organic vapors | Lacerations and amputations<br>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 | Personal protective equipment |
| 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 | Air contaminants |
| 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.

**Other Pertinent Comments:**