

International Hazard Datasheets on Occupation



Structural steel worker

Who is a structural steel worker?

A structural steel worker is a metal worker who is engaged in building metal structures, esp. in high-rise buildings, where he joins together steel beams, columns and surfaces, and creates a metal skeleton. Structural steel workers could also perform other tasks involving metal construction building sites, including work on air conditioning systems, ironwork fixing, and the like.

What is dangerous about this job?

- Hazard of falling down from considerable heights, while joining metal components of a building; and/or when the work is done while standing on a ladder or at an elevated surface
- Being hit by falling objects (falls of heavy loads on the feet or on other parts of the body)
- Eye injury, as a result of flying metal splinters, while working with a chisel and hammer, or when doing sharpening, cutting or welding works
- Back and spinal column injury caused by lifting and moving heavy loads
- Exposure to very high noise levels
- Electrocution, as a result of touching live electric wires, or while working with portable power tools the isolation of which is defective.

Hazards related to this job

Specific preventive measures can be seen by clicking on the respective  in the third column of the table.

Accident hazards		1
	<ul style="list-style-type: none"> • Hazard of falling down from considerable heights, while joining metal components of a building; and/or when the work is done while standing on a ladder or at an elevated surface 	1
	<ul style="list-style-type: none"> • Being hit by falling objects (falls of heavy loads on the feet or on other parts of the body) 	2
	<ul style="list-style-type: none"> • Stepping on, colliding or hitting an object (falling objects aren't included here) 	2
	<ul style="list-style-type: none"> • Slips, trips and falls, esp. where there is an oil spill 	2
	<ul style="list-style-type: none"> • Injuries and cuts caused by sharp objects, broken glass, knives and other sharp tools 	2
	<ul style="list-style-type: none"> • Over-exertion, or strained movements (Potential injury of back and spinal column as a result of lifting and moving heavy loads) 	3
	<ul style="list-style-type: none"> • Eye injury, as a result of flying metal splinters, while working with a chisel and hammer, or when doing sharpening, cutting or welding works 	2
	<ul style="list-style-type: none"> • Exposure to, and/or contact with electric current 	4
	<ul style="list-style-type: none"> • Exposure/contact with extreme temperatures 	

			5
		<ul style="list-style-type: none"> Injuries caused as a result of working on scaffolding, including their installation, work done while standing on top of them, falling from them, and the like; or as a result of being hit by a cable of a hoist and/or by the loads carried by it 	6
Physical hazards 		<ul style="list-style-type: none"> Exposure to very high noise levels (including ultra and infra sound) 	2
		<ul style="list-style-type: none"> Cold or heat load 	5
		<ul style="list-style-type: none"> Hand and arm vibrations influencing various body organs and systems 	7
		<ul style="list-style-type: none"> Eye injury caused by UV radiation emitted during welding operations 	2
		<ul style="list-style-type: none"> Exposure to various environmental factors, including extreme heat or cold, high moisture, increased or decreased air pressure, and the like 	5
Chemical hazards 		<ul style="list-style-type: none"> Dermatitis and allergic skin diseases, caused by exposure to organic solvents and their vapors (e.g. - washing various parts and components with trichloroethylene; dipping hands in kerosene and gasoline...) 	8
		<ul style="list-style-type: none"> Difficulty in breathing resulting from exposure to organic solvents, or when working in confined places lacking oxygen or having reduced oxygen content, or due to exposure to various other chemicals 	2
Biological hazards 		<ul style="list-style-type: none"> Respiratory infections caused by work outdoors, in a cold and windy atmosphere 	2
		<ul style="list-style-type: none"> Contracting various diseases, such as dermatitis caused by touching birds secretions, or due to contact with parasites residing in birds nests; by mosquito bites; by other insects and pests 	2
Ergonomic, psychosocial and organizational factors 		<ul style="list-style-type: none"> Back pains and other musculoskeletal problems caused by over-exertion, inconvenient work position (including prolonged work in a squatting position, working in a bent posture, overstraining in order to reach something above, ...) and from wrong work postures while lifting or moving heavy loads; the carrying of loads may result in back pains and injury of the discs separating the spinal column vertebrae 	3
		<ul style="list-style-type: none"> Injury as a result of repetitive movements or excessive effort 	3
		<ul style="list-style-type: none"> Psychosocial factors relevant to the type or place of workplace, such as human relations, work organization, being exposed to violence or crime at the workplace, shift work, and similar problems 	9

Preventive measures

1

Use only a ladder that is in a good condition; it should be placed in a safe manner that will prevent slipping; wear isolating safety shoes with non slip soles; ladders and scaffolding must be well tied, and the worker should be harnessed into them and also to other firm harnessing points, depending upon work needs and conditions

2

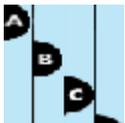
Use personal protection equipment, fit for the specific type of work (it may include a crash helmet, safety shoes with a protective cup or shoes with non-slip soles, work gloves, safety goggles, welding masks, respirators, gas masks, ear-plugs); if necessary – use a safety-screen that protects against ricochets and sparks

- 3 Adopt safe techniques for raising and lowering loads; use lifting aids when necessary
- 4 Do not use defective portable power tools or those with improper isolation
- 5 Work clothes should be fitted to the climatic conditions of the workplace (such as proper clothing and headcover that constitute good protection against bad weather)
- 6 All the components of the scaffolding must be examined with regard to their safety, prior to the beginning of work; use correct equipment for fall prevention (safety belts, harnesses, fall protection nets, canvas sheets, protective railings) when standing on the scaffolding
- 7 Elimination of injuries resulting from hand-arm vibrations requires adoption of the relevant medical, technical and administrative procedures (see ISO 1986)
- 8 Avoid direct contact between your skin and/or other body organs with allergenic materials, acids and strong bases
- 9 In severe cases, consult with an occupational psychologist.

Specialized information

Synonyms Bridge worker; house-smith; iron erector; ironworker; steel erector; structural-iron erector; structural-steel erector

Definitions and/or description



Structural steel erector performs any combination of following duties to raise, place, and unite girders, columns, and other structural-steel members to form completed structures or structure frameworks, working as member of crew: Sets up hoisting equipment for raising and placing structural-steel members. Fastens steel members to cable of hoist, using chain, cable, or rope. Signals worker operating hoisting equipment to lift and place steel member. Guides member, using tab line (rope) or rides on member in order to guide it into position. Pulls, pushes, or pries steel members into approximate position while member is supported by hoisting device. Forces members into final position, using turnbuckles, crowbars, jacks, and hand-tools. Aligns rivet holes in member with corresponding holes in previously placed member by driving drift pins or handle of wrench through holes. Verifies vertical and horizontal alignment of members, using plumb bob and level. Bolts aligned members to keep them in position until they can be permanently riveted, bolted, or welded in place. Catches hot rivets tossed by RIVET HEATER (heat treating) in bucket and inserts rivets in holes, using tongs. Bucks (holds) rivets while RIVETER, PNEUMATIC (any industry) uses air-hammer to form heads on rivets. Cuts and welds steel members to make alterations, using oxyacetylene welding equipment. May specialize in erecting or repairing specific types of structures and be designated Bridge-Maintenance Worker (construction); Chimney Builder, Reinforced Concrete (construction); Scaffold Builder, Metal (construction); Structural-Steel-Equipment Erector (construction) [DOT].

Related and specific occupations

Buildings tinsmith; metal-bridges installer; riveter; scaffolding installer (metal); welder.

Tasks

Adjusting; aligning; assisting; bending; bolting; boring; brazing; brushing; building (struts); catching; checking (hoists, cables,...); cleaning; climbing; combining; cutting; dismantling; drilling; driving; erecting; fastening; filling; fixing; forming (rivets heads); greasing; guiding; hammering; handling; harnessing; hoisting; inserting; installing; joining; lifting; maintaining; manufacturing; measuring; operating; painting; placing; polishing; prying; pulling; pushing; raising; reading (blueprints); removing; repairing; riding (on members); riveting; screwing; setting-up; sharpening; signaling; sitting (on steel-beams; spraying; straightening; tapping; tying; verifying;

welding; wrenching.

Primary equipment used

Bolts; chisels; cutters; drills; ladders; hammers; levels; manual and power tools; plumb; saws; screwdrivers; stretching-accessories; tongs; welding and brazing equipment; wrenches, and the like.

Workplaces where the occupation is common

Building, contracting and construction companies.

Notes



Structural steel workers may also install scaffolding and carry out work while standing on the scaffolding; sometimes the work is done at heights exceeding 100 meters – such a height could cause a feeling of instability and loss of balance. It is recommended to consult the hazard datasheet of “scaffolding-installer”

References



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 3. Occupational Disease - a Guide to their Prevention. DHEW- NIOSH Pub. 77-181,1977
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