



Ministry of Health, Labor, and Welfare 2017 Outsourcing Project

## Skill Training Seminar for Foreign Workers & Technical Intern Trainees at Shipbuilding Company

~for everyone's protection against accident and disaster~

全国造船安全衛生対策推進本部

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## Introduction

➤➤ To all foreigners working at shipyards here in Japan

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Foreigners working in Japan's shipyards are increasing every year and it seems that they will continue to increase in the future.

Now everyone is indispensable as "co-partners working in the same work place".

On the other hand, everyone working at unfamiliar shipbuilding site is mostly prone to accidents and disasters.

In order for you to protect yourself from accidents and disasters is to learn the designated rules, and most importantly to make sure that you follow the rules that is being set.

The Japan government has entrusted 全国造船安全衛生対策推進本部 to educate the foreigners in reference to disaster prevention.

Learn it well and we hope that you can apply it into your work starting tomorrow.

We wish everyone to work safely and energetically and to be active based on the skills and technique you have learned here in Japan.

Be safe!!!

全国造船安全衛生対策推進本部  
本部長 関田 彰

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## 1 General information

➤➤ 3S (Sort・Set in Order・Shine)

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➤➤ Signboards pertaining to Safety and Health

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➤➤ Safety passage ・Worker's walkway

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➤➤ Work-clothes and Protective equipment

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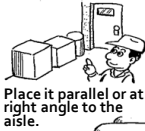
➤➤ Response in the event of a disaster

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➤➤ Work's that requires Qualification or License

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## 3S (Sort · Set in Order · Shine)



Place it parallel or at right angle to the aisle.



Material of the same shape are filed together



Do not place in the bottom layer items that you plan to use immediately.



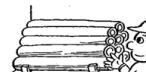
Be sure to put wedge/gagger to a round objects



Pile from heavy to light, from large to small items.



The height shall be 3 times less than the width (short side) of the bottom.



Long items must be piled lying down.



If to be piled-up upwardly, tied with a rope to prevent collapsed.

- ① Sorting: Organization: To separate necessary items from unnecessary items, and to dispose unnecessary items.
- ② Set in order: To plan how to place, arrange and stack the necessary item to make it easy to use and understand.
- ③ Shine/Cleaning: Remove dirt and dust and maintain it in a clean condition.

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## Signboards pertaining to Safety and Health



①



②



③

Safety and health signs are postings to prevent accidents and disasters. Let's correctly understand the meaning and follow it...

①立入禁止: No person allowed to enter.

②消火器: Fire Extinguisher

③昇降禁止: Do not use this for going up/down.

④火氣厳禁: Fire is not allowed to use.

⑤禁煙: Smoking is not allowed.

⑥酸欠危険: Caution for oxygen deficiency.

⑦高電圧注意: Dangers for electrocution, no person are allowed to enter.

⑧避難口: Emergency exit

⑨喫煙所: Smoking is allowed in this area



④



⑤



⑥



⑦



⑧



⑨

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## »» Safety passage · Worker's walkway



There is a safety passage and a worker's walkway in the workplace.

① Safety passage is white-line and worker's walkway is yellow-lane.

② Let's not put anything on safety passage or worker's walkway and materials sticking out.

③ When walking at the worksite, let's use the Safety passage & worker's walkway.



The white line is for safety passage, the yellow line is for worker's walkway

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## »» Work-clothes and Protective equipment



### WORK CLOTHES

- ① Let's close the cuffs and buttons securely
- ② Workers who use fire must not use inner wear made of synthetic fiber.

### Protective Equipment

- ① Helmet: Securely close the chinstrap
- ② Goggles: Wear goggles when using a grinder, high-speed cutting machine, etc.
- ③ Ear Plugs: Wear it firmly.
- ④ Dust Mask: Carry-out replacement of dirty filter  
Gas Mask: Diligently exchange the can if you smell something foul odor.
- ⑤ Safety belt: Let's wear a harness that is free from damage and wear.
- ⑥ Foot cover: Wear leggings when wearing a low-heel shoe.
- ⑦ Safety shoes: Make sure that the shoe sole is not worn or torn.

Protective-shell: Be sure to wear it on designated work-area.

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## » Response in time of disaster:

1 Call the attention of the people around in loud voice.



2 Do not perform the rescue alone

(a risk for oxygen deficiency, gas poisoning)



(dangers of electrocution)



3 Moving the rescued victim



Even if a disaster occurs, please remain calm and act accordingly.

① If you find an injured person: inform the people around in a loud voice.

② Stop the power source: since there is a risk for an electrocution, oxygen deficiency, gas poisoning, etc., please don't try to perform the rescue operation alone.

③ Movement: rescue the injured person once the people has gathered.

④ Plan ahead on how to respond and how to contact the concern parties if an emergency occurs

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## » Works that requires permit or license

### Crane Operation



Hoist load:  
• 5 tons or more:  
license required  
(On-floor  
operation type:  
Skill training)  
• Less than 5 tons:  
Special education

### Forklift Operation



-Skill  
training  
(1-ton or  
more )  
-Special  
Education  
(less 1t)

### Gondola Oper



Skill  
training

### SpecificDust-Work



Special Education

### Aerial platform operation\_



-Skill training  
(10m above)  
-Special  
Education  
(10m below)

### Assembly, dismantling and adjustment in scaffolding



-Special  
Education

### Grinding and stone



-Special Education

### Rigging works



Lifting load -  
Skill training  
(1-t or more)  
-Special  
education  
(less than 1 t)

### Ark-welding



Special  
education (dust  
& arc welding)

### Handling of Low voltage



-Special  
Education

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## 2 Prevention of accidental fall

### Working Platform

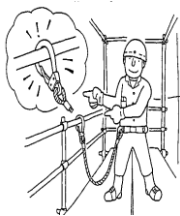
### Openings

### Ladders/stairs

### Aerial Platform • Lifter

### Methods for using the safety belt/harness (Belt type safety belt • Full body harness type safety belt)

### Working Platform



Safety belt ok !



Do not change arbitrarily



Do not step on the railings

①The place of work is over 2 meters. When working on platform of 2-m or more is required to use safety belt.

②Do not change or detach the mounted scaffolds without permission.

③When working on elevated platform, let's tie or put it in the storage bag so that machinery and tools do not fall.

④When working on a wooden scaffold, limit the worker to 2 people.

⑤Do not work beyond the caution-rope at the block's edge.

⑥Do not step on the railings, overhang, or work in an unreasonable working posture.

(Let's take cautious actions when working on top of the scaffolding)

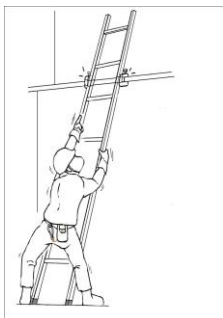
## » Openings



- ① Do not go near the openings where there is no fall prevention measure, or approach closely.
- ② If you find a problem in the preventive measure for fall, make the necessary measure and contact the concerned parties.
- ③ Do not remove the cover for fall prevention. Restore the cover when the work is done.
- ④ Always use the unloading rope for lifting up and down material and tools.

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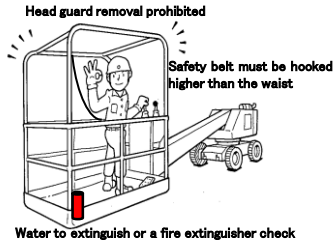
## » Using ladders



- ① When going up/down the ladder, check if securely tight and fix it if it's unstable before using the ladder.
- ② When going up/down a ladder don't hold an item in your hand (3 point-touch).
- ③ When using a movable ladder, securely bind before going up/down. Call an assistant if you cannot fix it.

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## ➤ Aerial Platform • Lifter

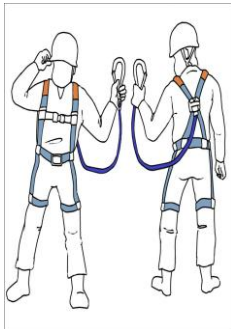
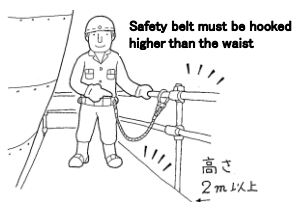


- ① The people who have the qualifications will operate. (Skill training for over 10-m, Special education for less than 10-m)
- ② Make inspections of the specified areas to be check before starting to work.
- ③ Only 2-workers can ride the platform.
- ④ Check if there is a fire extinguisher or water to extinguish fire inside the bucket.
- ⑤ Do not remove the head guard without permission. Also, do not lean-out of the guardrail.
- ⑥ You must clamp your safety belt in places higher than your waist.
- ⑦ Take cautions on the dents and obstacle along the road surface. And also, do not operate on an incline surface.

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## ➤ Methods for using the safety belt/harness

(Belt type safety belt • Full body harness type safety belt)



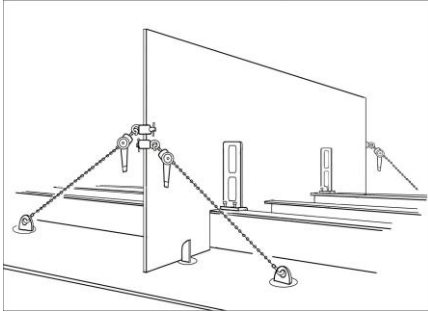
- ① Check the belt if there are wear, scratches, burns, etc.
- ② When working 2-m and above, hook your clamp on points above your waste.
- ③ When hooking a parent rope, do not spend more than two people.

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### 3 Prevention of Collapse & Falls-over Disaster

#### Rules to be observe on Block Assembly

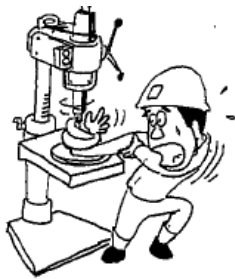


- ① Before assembling the block, check the necessary tools such as the attachment jigs.
- ② Be sure to check the welding (remove the slag) after mounting the fitting-support piece.
- ③ During a block assembly, let every worker have a complete exchange of information to avoid a dangerous situation. And also, don't allow other workers to get near until the block mounting is stabilized.

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### 4 Prevention of Caught-in-Between Disaster

#### Precautions for rotary machine and drilling machine



- ① Only designated person shall be allowed to use...
- ② Be careful with your clothes, towels, etc., of not to be caught in the machine.
- ③ The use of gloves is prohibited when using rotary machines.
- ④ Always switch off after work and clean the surroundings.



#### ボール盤取扱い注意事項

1. 指名者以外の者は使用禁止
2. 頭部や着衣等がドリルに巻き込まれない様な服装をすること
3. 手袋(軍手・皮手袋)の使用禁止
4. キリの取替、または機械に注油する際はスイッチを切り回転が完全に停止してから行うこと
5. 加工物はいかなる物でも固定、回り止めを行うこと。(手で持つことは禁止)
6. 切り冷却油、水等の注入は要具等で行う
7. 切削屑の除去はスイッチを完全に停止してからブラシ等で行うこと

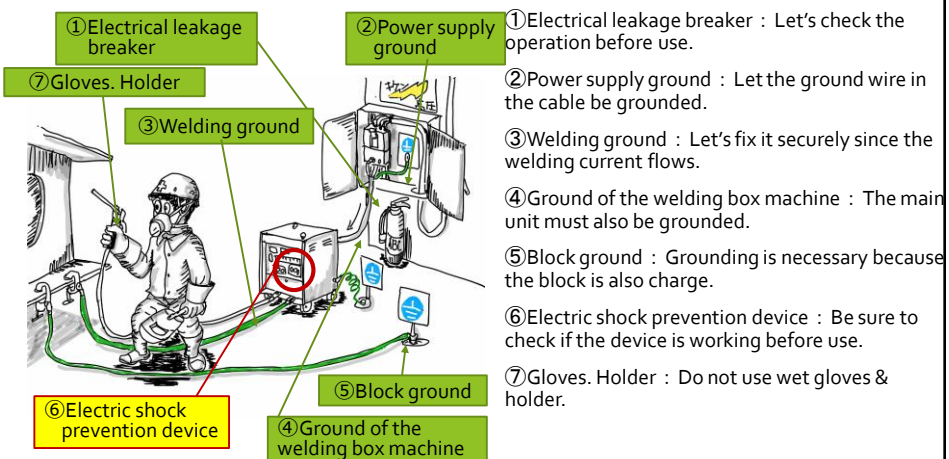
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## 5 Prevention of Electrocutions

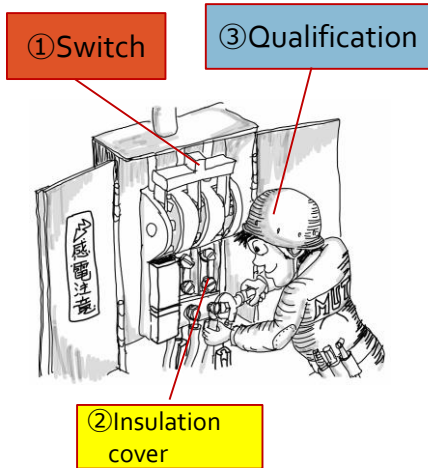
### ▶▶ Arc Welding Operation(AC Arc Welding Machine)

### ▶▶ An example of low-voltage electric handling operations

### ▶▶ Arc Welding Operation(AC Arc Welding Machine)



## ➤➤ An example of low-voltage electric handling duties



Low-voltage electrical works is a task that the body might come into contact with the electrically expose charge part.

Every work that might cause electric shock is a target.

① Switch : Be careful not to forget to switch off.

② Insulation cover : There is a possibility of an electric shock in the electrically expose charge part.

③ Qualification : Perform operation on low-voltage electrical work after you finished the Special Education.

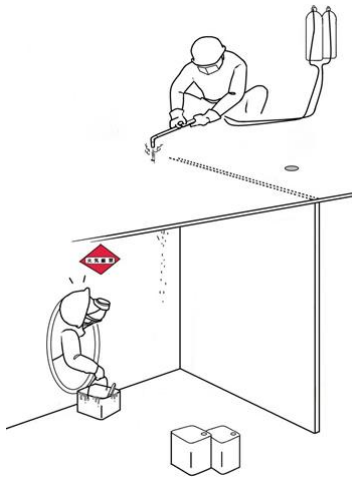
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## 6 Prevention of explosion and fire accidents

### ➤➤ Explosion. Fire prevention measure

### ➤➤ General precautions for painting work

## ➤ Prevention of explosion and fire accidents



① For work that uses fire, bring a fire extinguisher and water for extinguisher.

② Gas cylinders are placed in a standing position and fixed with chains etc. keep in a well ventilated area below 40°C.

Let's take good care of ourselves during summer using sun nets.

③ Use the gas/oxygen hose that was inspected.

④ When working inside the tank with fire, check the presence of inflammables in the surroundings and at the back of the wall.

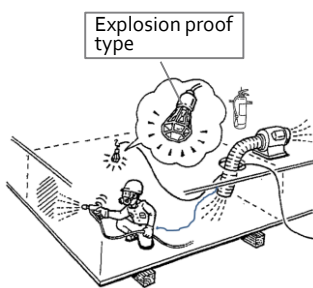
⑤ Let's attach a safety device to the gas and oxygen cylinder.

⑥ Cover the area with fire resistance sheets when the electric sparks scatter.



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## ➤ General precautions for painting work



① Work according to the instructions of the foreman when using Organic solvent.

② Do not bring any cigarette and lighter at the painting work site.

③ Check the location of the fire extinguisher before work.

④ When wearing a gas mask and if you smell something strange immediately change the gas filter or canister.

⑤ When wearing a full scale mask make sure it's fit.

⑥ When working in the tank block, install a ventilation fan and use an explosion proof type light.

⑦ When using the airless coating machine, let's securely install the ground.

⑧ Eating and drinking in the working premises is prohibited

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## 7 Preventing cut or bruises accident

### ➤ Precautions for grinder operation



- ① Always wear protective gear such as goggles, dust mask and leather gloves.
- ② The grinder stone replacement will be done by the qualified person who finished special education.
- ③ Make sure to install the protective cover correctly.
- ④ Keep the grinder stone at places protected from rain water.
- ⑤ Check the electric grinder machine's abnormalities such as cracks in the cord and breakage of the plug.
- ⑥ After changing the grinder stone make a 3 minutes idle operation and check if there is any abnormal sound and vibration.
- ⑦ When changing the working position, do it cautiously as the grinder stone is spinning.
- ⑧ After the completion of work stop the spinning of the grinder stone and leave it upward.

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## 8 Fall accident prevention



- ① Do not walk while your hand is in your pocket, talking with other people and using mobile phones.
- ② Wear a non-slip safety shoes.
- ③ Do not put anything on the stairs or at the safety pass-way.

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## 9 Prevention of the occupational diseases

### ➤ Organic Solvent Work

### ➤ Oxygen Deficiency Work

### ➤ Dust Work

- Welding Operation

- Grinding Operation

- Pneumoconiosis

### ➤ Vibration Tool Work

### ➤ Noise Work

### ➤ Work in a high temperature and high humidity

## ➤ Organic Solvent Work



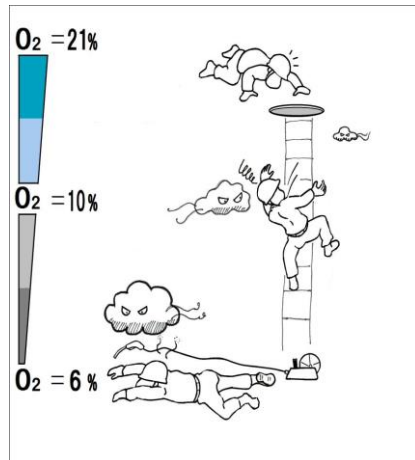
Inhalation of dense steam may cause 「Acute Organic Solvent Poisoning」 .  
Take note the following.

- ① Ensure an adequate ventilation.
- ② Work according to the instruction of the work foreman.
- ③ Use a gas mask or air line mask.
- ④ In case of wearing a gas mask , change the mask filter/canister as soon as you smell something strange.

Without the proper use of protective equipment , even with a thin steam may cause chronic poisoning such as neuropathy, liver disorder and renal disorder.

※Organic solvent workers should take a medical examination for organic solvent.

## ➤➤ Oxygen deficiency work



If the oxygen density is less than 18% the respiration stops and may cause dizziness, seizures, nausea etc., which may result to death.

- ① Ensure that the ventilation is adequate.
- ② Be aware the danger of oxygen deficiency.
- ③ Work according to the direct instructions of the oxygen deficiency work foreman.
- ④ Confirm that the oxygen density was measured prior to work.

Places where oxygen deficiency occurs.

- ① Ballast tank inner wall. Hold inner wall. Oxidation or cargo etc.
- ② Work in a close environment (Oxygen Consumption)
- ③ Oxidation of the iron tank inner wall made of exposure.
- ④ In the tank where molds occurred.
- ⑤ Inhaling of microorganisms inside the tank Oxygen

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## ➤➤ Dust Work

### ▪ Welding Work



Welding work may cause 「Pneumoconiosis」

- ① Adequately ventilate the work area .
- ② Use a dust mask.。

※ Always check the protective equipment and maintain it in a good condition.

### ▪ Grinding Work



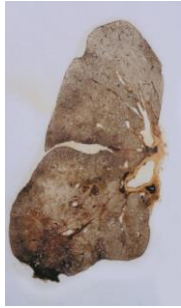
When a person inhale a lot of dust from grinding polishing work he might suffer from "Pneumoconiosis"

- ① Install adequate ventilation.
- ② Use dust mask, goggle and earplugs.

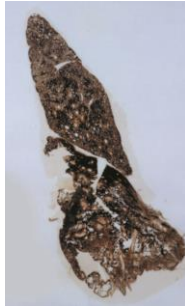
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## ➤➤ Dust Work

### ▪ Pneumoconiosis



Normal Lung



Pneumoconiosis  
Long exposure to inhaling dust  
will cause the lung to be black.

In the environment where Arc Welding and Metal Polishing work done, the workers who are exposed to dust will lead them to a disease called "Pneumoconiosis".

Workers who are exposed in the dust work should take the Pneumoconiosis health check up.

✘ There is no cure for Pneumoconiosis.

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## ➤➤ Vibration Tool Work



Grinder Polishing Work

"Raynaud's Syndrome (white wax disease)" is an injury triggered by continuous use of vibrating hand-held machinery like grinders and chippers while working.

- ① Inspect the vibration tool prior to work.
- ② Use a vibration proof gloves.
- ③ Use dust mask, goggles and earplugs.



Chipper used for removing a welding slag



White wax disease

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## ➤➤ Noise Work



Medium hammer blow sound 100 dB



Grinder Work 85dB

Exposure to noise for a long time may result to 「Occupational Hearing Loss」.

※ There is no cure for Occupational Hearing Loss.

- ① Use earplugs when working at noisy area.
- ② Fit the earplugs properly into your ear.



How to put the earplugs

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## ➤➤ Work in a high temperature and high humidity



In a workplace where the temperature is high and humid may cause heatstroke which may lead to death.

- ① Drink water (Sports drink) and take salt appropriately.
- ② Wear working clothes with good moisture permeability and breathable which allows air to pass through easily.
- ③ If you are not feeling well do not hesitate to tell it to your boss.

If something that applies to you below, watch out for heatstroke!

- \* Staying up late and lack of sleep
- \* Hangover when drinking too much
- \* Has a fever, diarrhea and catch a cold
- \* Didn't eat breakfast well
- \* Not feeling well

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## 10 Examples of accidents suffered by foreign technical intern trainees

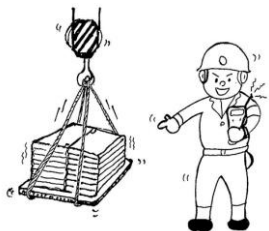
➤➤ The lifted load collapse and was hit by the fallen parts which lead to death

➤➤ Get trapped under collapsed wall then died

➤➤ Died after touching a leak-grounded blower fan

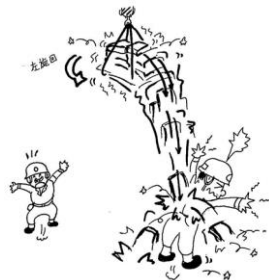
➤➤ Died because the working clothes was burned due to welding sparks

➤➤ The lifted load collapse and was hit by the fallen parts which lead to death



### Situation that lead to Accident

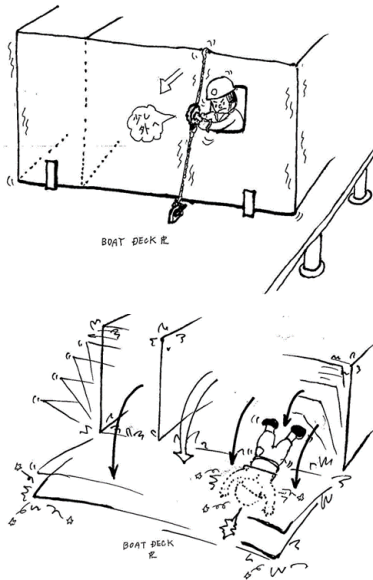
- In order to move the materials , the iron plates was piled up (without bonding it) and using the 6ot jib crane slinging-work was done.
- The loaded materials dropped, when the hung cargos swung.
- The victims who stand by, under the lifted cargos were hit at his back when the lifting materials dropped.



### Preventive Measures

- Be cautious of collapse on transport, like putting the small materials in the pallet and etc.
- Evacuate to a safe place when there is a lifted cargo passing through overhead.

## ➤➤ Get trapped under the collapsed wall then died



### Situation that lead to Accident

- During the installation of the side wall at the assembly area, in order to adjust the inclination of the side wall, the victim pulled his upper half body from the square window on the side wall, and applied a lot of force than necessary to the block lever which lead it to collapse.
- The temporary welded support post on the DECK (inside) were both broken, which lead the wall to collapsed and smashed the victim's face on the plate of the BOAT DECK which was next to the jig.

### Preventive Measures

- Strictly observe the defined work instructions and collapsed prevention standards.
- The lever block does not necessary to apply a lot of force.

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## ➤➤ Died because of touching the blower fan which in the state of electric leakage



### Situation that lead to Accident

While moving through the car deck where rainwater is accumulated, the victim touched the blower fan and got electricuted.

- The blower fan was grounded by an electric leak.
- The electric leakage breaker was not installed.
- There was a lot of rainwater around the blower fan which is easy to get an electric shock.
- Cable connection work was be done by unqualified person.

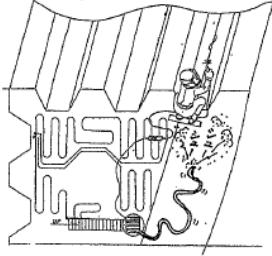
### Preventive Measures

- Inspect if there were an electrical leak on the equipment.
- Do not touch the wet electric machine equipment unnecessarily.

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## ➤➤ Died because the working clothes got burned due to welding sparks

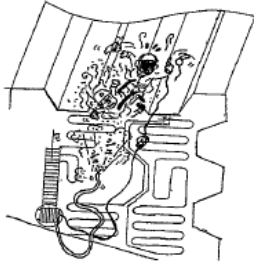
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### Situation that lead to Accident

While a Chemical tanker was being outfitted and a CO<sub>2</sub> arc welding was underway, the sparks from welding inflame the workers that cause his death.

- The victim was doing the CO<sub>2</sub> Arc Welding inside the tank.
- During the Arc Welding work the victim's clothes got burned due to welding sparks.



### Preventive Measures

- Do not wear a working clothes including underwear made of synthetic fiber.