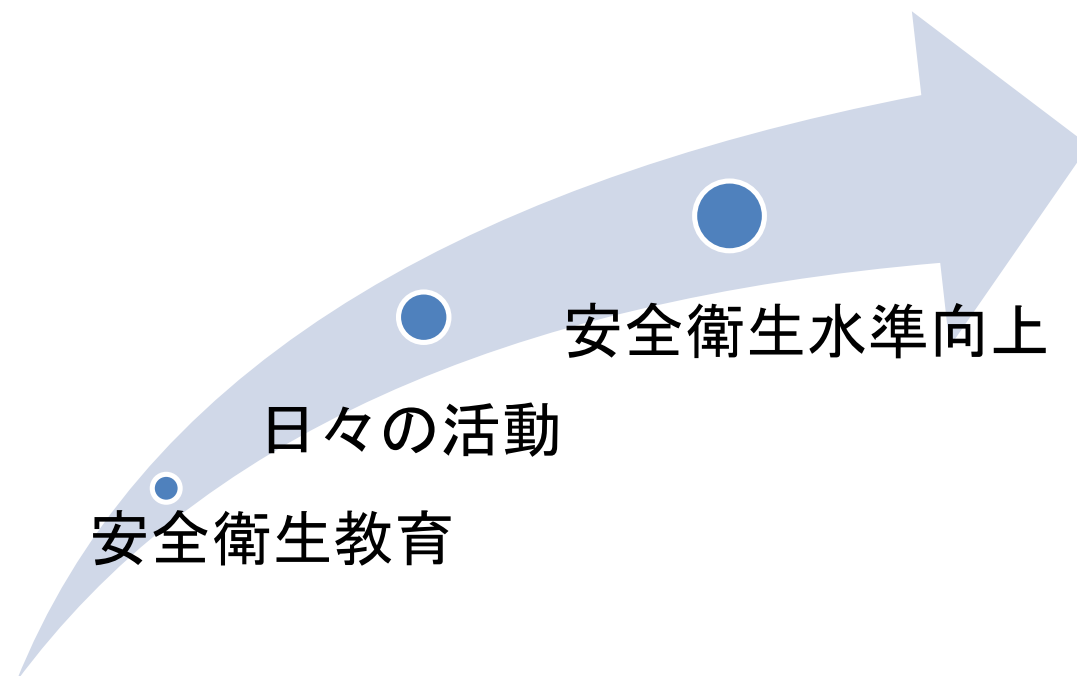


厚生労働省委託事業

製造業向け

未熟練労働者に対する安全衛生教育マニュアル

外国語教材(英語)



留意事項

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(※1) <http://www.mhlw.go.jp/chosakuken/>

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(※2) 未熟練労働者に対する安全衛生教育マニュアル

<http://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000118557.html>

英語 English

To those working in the manufacturing industry

For Work Safety and Health

Point 1 There are Various Dangers at Workplace !

【Industrial Accidents Case 1】 Caught in a machine !

1 Industrial accidents occurrence

- ① A soybean could be stuck in the chopper (food chopping machine) while work in process.
- ② Trying to remove the soybean with your hand while the chopping machine is still running.
- ③ Putting hands deep into the hopper (opening of the machine) may touch the inner blade accidentally, hence resulting in hands getting caught in the machine and fingers cut by the blade.



2 Not safe work practices

- ① Victim makes work adjustments without stopping the chopper.
- ② Inadequate knowledge and awareness about the danger of food machines.

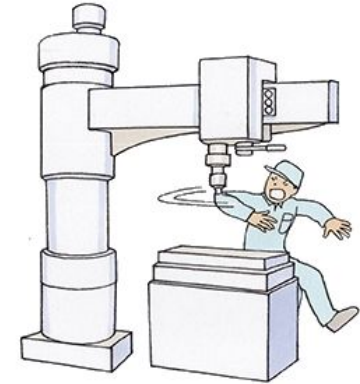
3 For work safety

- ① Be aware that there are various dangers that exist in a workplace even a food machine as a typical example.
- ② Be sure to stop the machine before cleaning or adjusting any parts (including fixing problems) of the machine.
- ③ Be sure to follow the safety instructions stated in the health and safety manual, on how to avoid dangerous work practices (safety device, emergency switch etc.).

【Industrial Accidents Case 1】 Caught in a machine !

1 Industrial accidents occurrence

- ① Changing the blades of the drilling machine while leaving the object, which is to be drilled on to make holes, on the table.
- ② The worker's right sleeve may be caught by the spinning blade of the running machine, and hence causing the worker's body to spin and hang in midair. As a result, he suffered a wounded arm and broken bone.



2 Not safe work practices

- ① Leaving the blade of the drilling machine spinning.
- ② The right arm comes into contact with the blade of drilling machine for some reasons.

3 For work safety

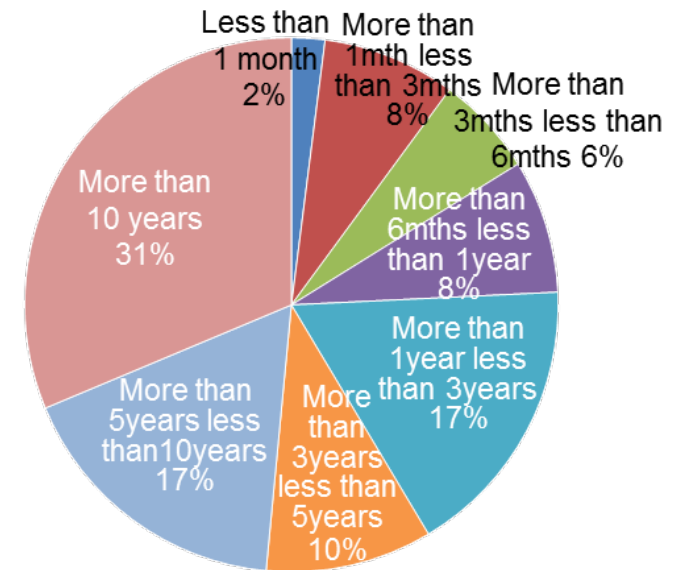
- ① Turn off the machine even when preparing to drill the object.
- ② Install an emergency stop device near the blade of the drilling machine.
- ③ Do not approach the drilling machine when the blade is spinning.
- ④ Implement risk assessment and create a health and safety manual.
- ⑤ Inform all workers about the health and safety manual and re-educate them.

【The Trend of Industrial Accidents】

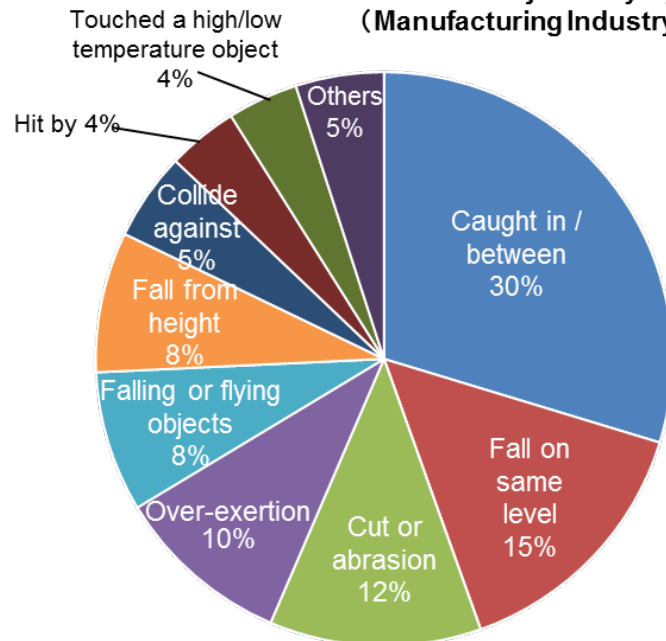
1 Happen frequently with workers who are inexperienced

- ① 25% of the accidents were from workers, who have less than 1 year of experience and so high caution is needed.
- ② A huge portion of 42% of the accidents were from workers, who have less than 3 years of experience.

Breakdown of Deaths and Injuries by Years of Experience in 2014 (Manufacturing industry)



Breakdown of Death and Injuries by Type of Accident (Manufacturing Industry)



【 The Trend of Industrial Accidents by Unskilled Workers】

2 Many accidents were caught in/between machine!

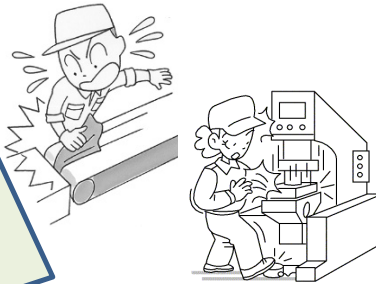
- ① “Caught in/between” machines accidents accounted for about 30% of the accidents.
- ② “Fall on the same level” accidents accounted for about 20%.
- ③ The rest were “cut by blade of machine and knife”, “falling from stepladder”, “backache due to heavy handling” and etc.

Point 2 「KAMOSHIRENAI」= May Be Awareness !

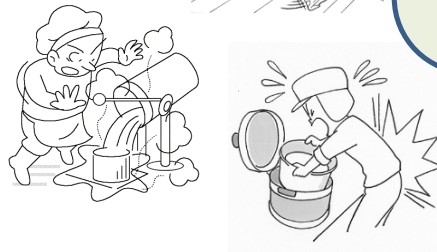
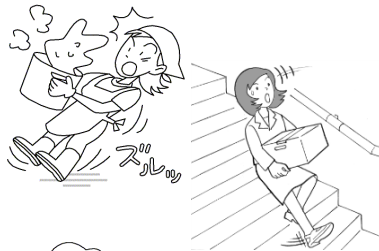
Let's work with the “may be” awareness !

People may...

- stuck
- caught up
- hit
- fall over
- fall down
- burn
- electric shock
- back injury
- gas poisoning
- lack of oxygen
- toxic poisoning



may be



Things may...

- move
- spin
- fly
- fall
- fall out
- burn
- collapse
- crumble
- explode
- leak out



may be



Point 3 Work Safety Starts with Proper Attire !

- ◆ Put on **proper and safety attire** during working hours.
- ◆ Put on uniforms that is light and **fitting**.
- ◆ If you are wearing long sleeves, please tighten your **cuff**. As for your shirt, tuck the rest of your **shirt (hems) into your pants**.
- ◆ Do not put sharp tools like screwdrivers and drill bits **into your pockets** while working.
- ◆ Do not put towels and hand towels over your shoulders as they **get caught** in the machine.

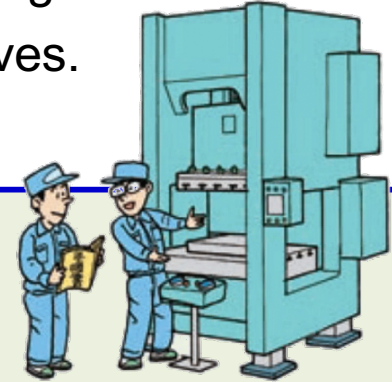
【Put on your safety helmet correctly】

- Check your chin strap, tighten if necessary, wear your hat all the way in
- Check if it is scratched or worn out
- Basically it serves as a protection from falling objects



Point 4 Follow the Procedures on the Manual

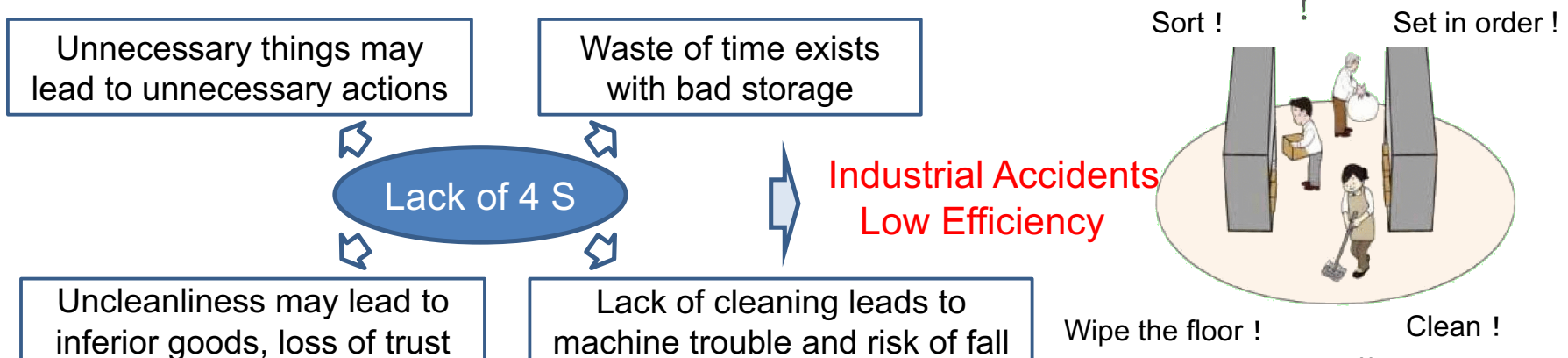
- There are various dangers at a workplace.
- A safety manual is created in order to work effectively and in good health.
- Let's follow the operating procedures and let's protect our lives.



- ◆ Be sure to follow the **operating procedures** (working standards).
Do not use other methods unless otherwise stated.
- ◆ Be sure to understand the necessity of the **safety device**, and do not take them off nor perform any work without putting them on.
- ◆ **Practice** what is written on the manual and turn them into good habits.
- ◆ For safety, be sure to understand **what should be done and what should not be done**.
- ◆ Be sure to check the person in charge when **unsure** of the procedures.
- ◆ Be careful of **injury caused by habits**. Do not do blind nor forceful acts.

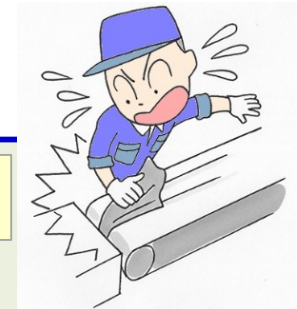
Point 5 Enforce 4S, 5S to improve safety !

- ◆ 整理 (SEIRI=Sort) Classify the necessary and unnecessary things. Discard the unnecessary ones.
 - Improving the efficiency and decreasing the risk of fall accident.
- ◆ 整頓 (SEITON=Set in order) Arrange necessary items so that they can be easily selected or use.
 - Decrease waste of time and improve quality.
- ◆ 清潔 (SEIKETSU=Shine) Remove dirt and keep the workplace around you clean.
 - Improving quality, prevent food poisoning and alien substances.
- ◆ 清掃 (SEISOU=Standardize) Remove the stain and rubbish around the machine facilities.
 - Maintain the function of the machine and decrease the risk of accidents.
- ◇ 習慣 (SYUUKAN=Sustain) Follow the specified procedures.
 - Practice repeatedly and turn them into good habits.



Point 6 Enforcement of Work Safety to create a Safe Workplace !

Let's put in effort to prevent industrial accidents such as “caught in/between”, “fall on same level”, “cut or abrasion”, “heatstroke” and “backache”.



① Points to prevent “caught in/between” accidents

■ Start cleaning and repairing the machine after switching it off !

Cleaning or adjustment of conveyor and roll should be started after stopping the machine completely.

■ Prevent the sudden start of a machine.

Prevent the sudden start of a machine by putting up a “repairing” notice and allowing the person in charge to switch on the machine.

■ Maintain the functions of the surrounding safety devices.

Let's do inspection and servicing to keep effective maintenance.

■ Case①-1 A worker and his colleagues were exchanging the belt that was between the water turbine and the motor during cleaning process. His colleague **turned on the power switch without confirming the completion of exchange**, thus the worker had his fingers stuck in the belt. (34 years)



■ Case①-2 During the press work process, the product was caught in the sliding metal mold. Instead of the following the manual, a worker **decided to take out the stuck product by his own judgment**. Suddenly. The sliding block began to move again and the worker's finger was cut as a result. (33 years)

■ Case①-3 During the cleaning of a belt polishing machine, the V belt was not operating smoothly. A worker **stretched hands into the gap of machine's cover to repair it, without switching off the machine**. Suddenly the machine began to run again, causing his hands to be caught in V belt and resulting in an injury. (26 years)

② Points to prevent “fall on the same level” accidents

- Keep the floor “clean”, “in order”, “shine”, “sustain” for safety !
 - wipe away all dirt on the floor (beware of wet floor while cleaning)
 - unnecessary things may become the cause of “stumbling”

- Use the cart when carrying big heavy items !

If the cart cannot be used, carry items with two persons or separate it into several times to carry.

- Do not carry the goods when moving !

The risk of “falling on the same level” is higher when carrying goods while moving.

- Keep the pathway bright !



■ Case②-1 A worker was planning to move to other spot after finishing packing the bento. When he moved, **he slipped and fell**, hitting his waist and head against the floor. (25 years)



■ Case②-2 A worker was holding a bowl that was filled with substances, while passing through a line of workers to get through. When he tried to cross over the hose, his feet were caught and he tripped and fell, resulting in an elbow fracture. (62 years)

■ Case②-3 A worker was moving in the factory, and trying to cross over the conveyor, but **one of his legs was caught by the bag**, causing him to **fall over** to the other side of the conveyor. Hence receiving a hard blow on his knee. (54 years)

■ Case②-4 A worker was carrying the used filters from the 2nd floor to the 1st floor, while **he missed a step**, thus twisting his feet and falling over. It was a situation where it was difficult to confirm the situation in front of you while **carrying 2 boxes with both hands**. (54 years)

③ Points to prevent “cut or abrasion” accidents

- Be careful when cleaning the blades of the processor machine !

Switch off the machine, make sure it is completely turned off before checking, cleaning, repairing the machine. Then begin to work.

There are many serious accidents that happened especially relating to food processing machine.

- Keep the safety of the placement and places of kitchen knife !

Enforce 4 S (Set, Sort, Shine, Sustain). Do return the knife to its place after using.



■ Case③-1 A worker was **cleaning** the food processor machine while holding a brush with one of his hands. He **did not switch off** the machine before he started cleaning. He got too absorbed in the cleaning that he had his fingers cut by the machine. (21 years)



■ Case③-2 While working in the factory, a worker inserted the piston ring into the processor machine. After noticing that he had made a mistake, he wanted to take it out, **so he put his hands into the machine while it was still running**. Unable to press the emergency button in time, the root of his thumb was cut and injured. (22 years)

■ Case③-3 While a worker was moving with a cart, he accidentally knocked his hands against an aluminum pipe loaded on top, resulting a cut on his finger. (57 years)

■ Case③-4 When spreading the plastic sheet on the working stand, a worker did not notice that **the kitchen knife was nearby**, thus cutting his finger accidentally. (34 years)

④ Points to prevent “heatstroke”

There is a risk of “heatstroke” in the workplace with high-temperature and high humidity.



■ Heatstroke Prevention !

- be careful of changes around you and your own body condition such as insufficient sleep
- put on clothes that has good air permeability and quick-drying
- take breaks and drink water frequently

■ The symptoms below indicate that you may be having “heatstroke” !

- dizziness, numbness of the legs, muscle weakness or cramps, feeling ill
- headache, nausea, vomiting, fatigue, body condition that is different from usual
- strange speech, unconsciousness, cramps , high body temperature (**serious**)

■ Contact your superior and take the measures below !

- move to a cooler place
- loosen your clothes, cool your body (especially around your neck, armpit, the bottom of foot)
- take water/salt, salty grape liquid (dissolve the salt and glucose in the water)

If one can't drink by himself and loses consciousness, call the ambulance quickly !

⑤ Points to prevent “backache”

■ Work posture and movements (handling heavy goods)

- Get close to the heavy goods as much as possible, lower the center of gravity

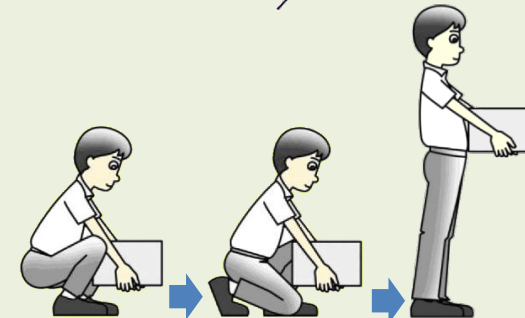
- [In the case of lifting heavy goods]
Take a step forward with a bended knee, lower your waist to hold the heavy goods, then stretch your knee to stand up.

When lifting heavy goods, control your breathing, add pressure to your abdominal muscle pressure

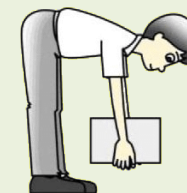
- [Moving around with heavy goods]
Keep the distance short. Avoid climbing the stairs.

■ Warm up exercises to prevent backache

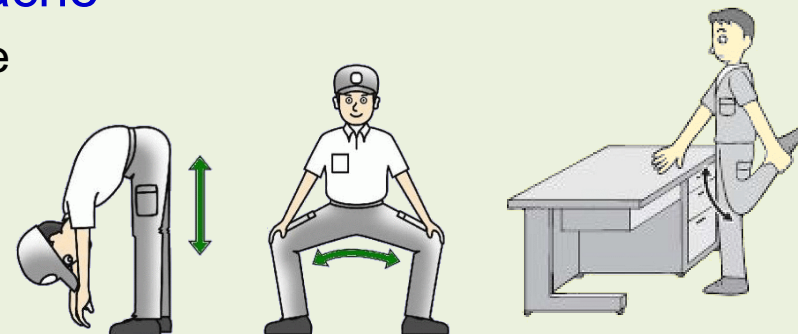
Do warm up exercises with stretching with the main focus to prevent backache.



the right posture



the wrong posture



Point 7 If unusual situations or industrial accidents happen !

(1) If “unusual situations” happen

- ① When you find that the situation is unusual, confirm what is happening first.
- ② Inform your superior and colleagues around you with a loud voice.
- ③ Stop the machine by pressing the emergency button if necessary.
- ④ Take proper measures, cooperate with your colleagues and follow the instructions of your superior.
- ⑤ Do not take actions by yourself.

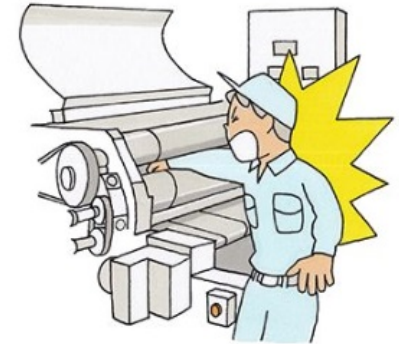
【Notice !】

If the condition of the machine is different from usual, inform your superior and people around you as soon as possible !



(2) If “industrial accidents” happen

- ◆ It is impossible for industrial accidents occurrence to be 0 !
- ◆ Implement anti-disaster drill from daily life to emergency !
- ◆ If industrial accidents happen, take the following steps !



Measures to take when industrial accidents happen (Example)

Industrial accidents happened



Site support

Calm down first !

- To prevent the happening of a secondary disaster, do not panic and rush to the spot
- Inform others with a loud voice

Rescue the victims !

Contact your superior (the person in charge) !

- Assist the rescue with the instructions of your superior (carry the victims to the hospital etc.)



ご安全に (GOANZENNI)

Work Safety First

Additional Information

○ The importance of Safety and Health Education

【Prevent Industrial Accidents by Safety and Health Education】

- 1 There are various dangers in workplace. The industrial accidents still occur frequently.
- 2 In order to prevent industrial accidents
 - ① Measures are needed to eliminate “FUANZEN = not safe condition” for things aspect, for example, equipment at the workplace.
 - ② Measures are needed to eliminate “FUANZEN = not safe act” in the people aspect.
- 3 The main objective of safety and health education is point ② in the above.
- 4 Main points to be understood and acquired are as follows,
 - ① to understand that the awareness of danger at workplace danger is low.
 - ② to be able to avoid danger and work in a safe manner.

【 Contents of Safety and Health Education】

What you should understand about safety and health education.

① “There are various dangers in workplaces.”

② Develop a sense of danger by thinking “KAMOSHIRENAI = may be”.

③ “Basics of accidents prevention” (1st point) ~ there are various rules and activities

- Put on proper attire
- Enforce 4S
- KYT Activity: KIKEN (Danger) YOCHI (Predict) TORENINGU (Training)
- Optimize your vision for danger
- Follow the procedures on the manual
- HIYARI・HATO Activity
- Risk Assessment

④ “Basics of accidents prevention” (2nd point) ~ there are basics to work safely

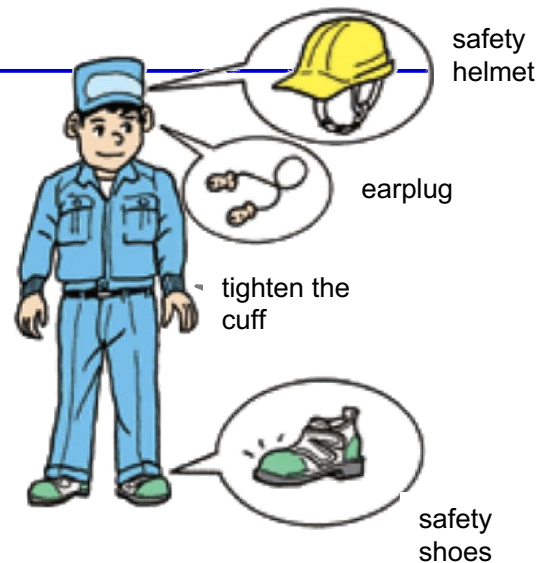
- Prevention of “caught in/between”
- Prevention of “cut or abrasion”
- Prevention of “backache”
- Prevention of “fall on the same level”
- Prevention of “heatstroke”

⑤ “Basics of accidents prevention” (3rd point) ~ if industrial accidents happened

- Respond to unusual situation
- Respond to industrial accidents

【Enforce Safety and Health Education repeatedly and acquire them】

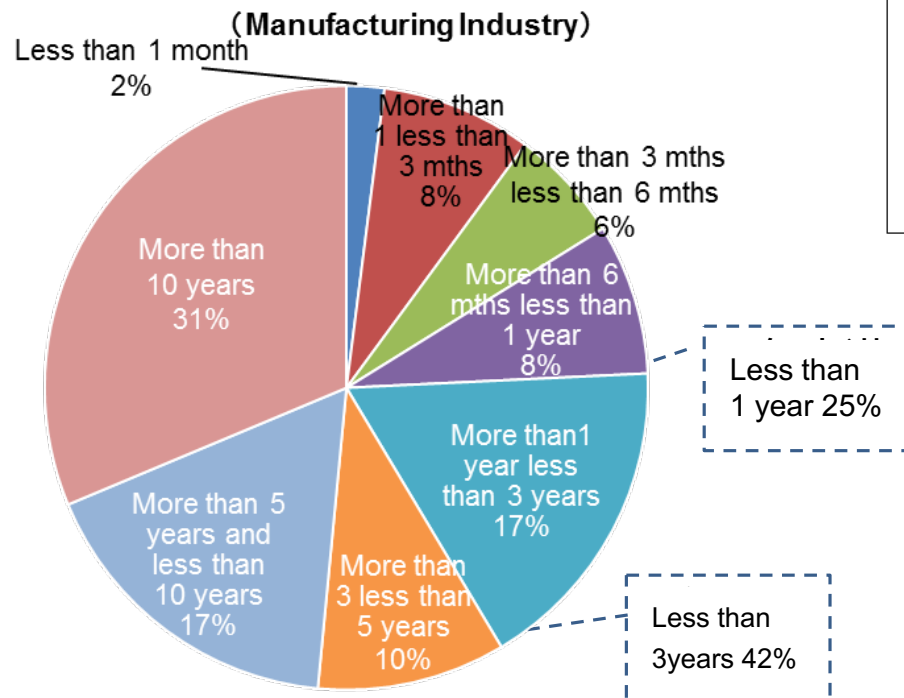
- ① It's meaningless to only know about safety.
- ② Be able to work safely in real work situation.
- ③ When you are not used to the working procedures, always follow consciously the contents of safety and health education.
- ④ Always be conscious of safety and apply them at work. By doing so safety will be acquired.



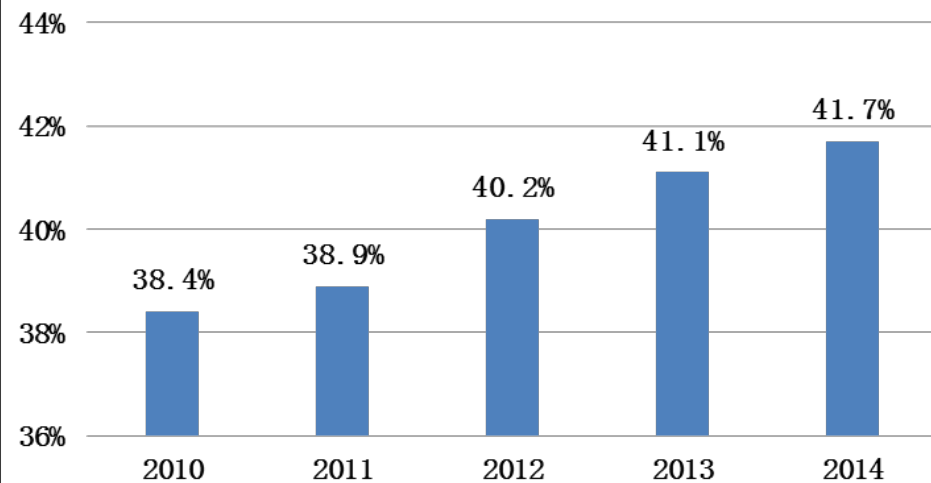
○ Increase number of Industrial Accidents by workers with few years of experience (unskilled workers)

○ The proportion of unskilled workers with less than 3 experience years increased.

Breakdown of Industrial Accidents by Years of Experience in 2014
(Manufacturing Industry)



Breakdown of Workers' Deaths and Injuries by Experience less than 3 years
(Manufacturing Industry)



○ Breakdown of Years of Experience (Manufacturing Industry in 2014)

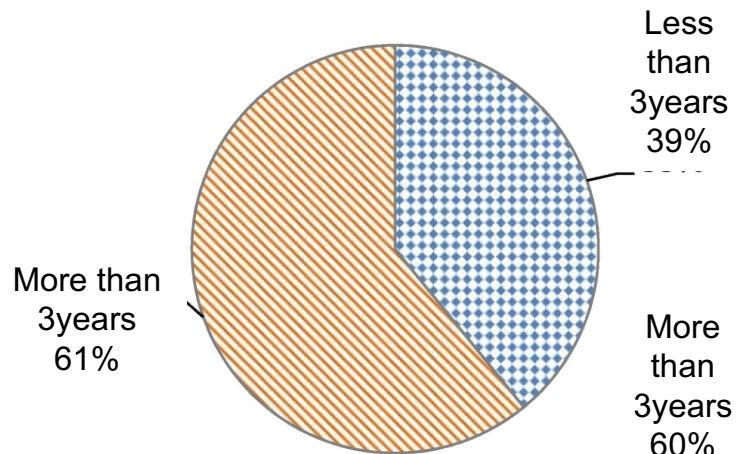
Workers with less than 3 years experience accounted for more than 40%. Less than 1 year of experience accounted for about 25%, accounting for the majority.

【 Breakdown of Industrial Accidents by less than 3 years of experience 】

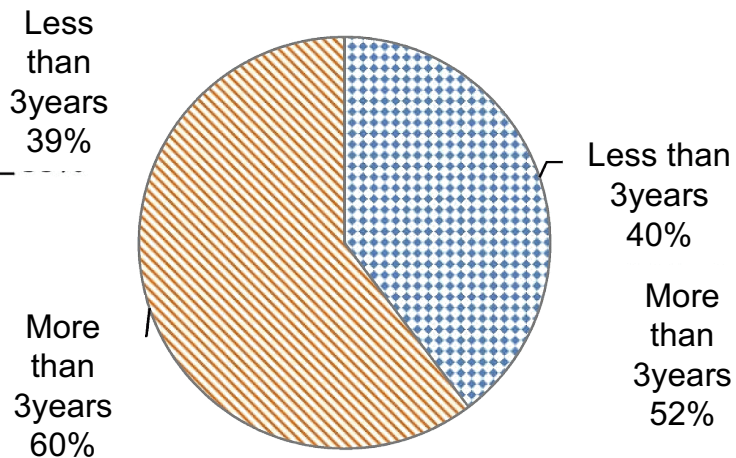
- Manufacturing industry has the highest percentage among all industries
- Food product industry accounts for half.

➡ Industrial Accident Preventive Measurements are needed for unskilled workers.

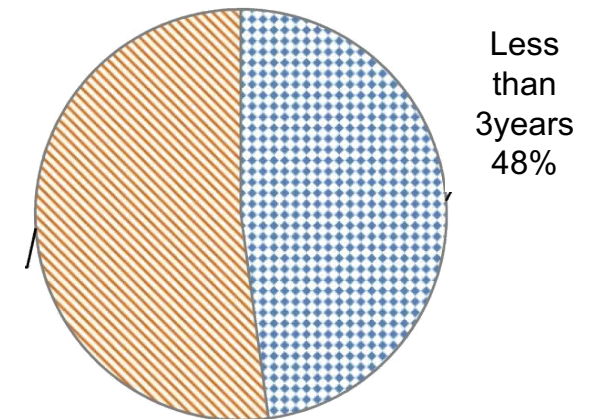
Breakdown by Years of Experience
(All industries)



Breakdown by Years of Experience
(Metal product manufacturing industry)



Breakdown by Years of Experience
(Food product manufacturing industry)



Source: Ministry of Health, Labor and Welfare

(3) Details of Industrial Accidents by Unskilled Workers

<Industry type> ○ Food product industry is the largest and accounting for about 1/3.

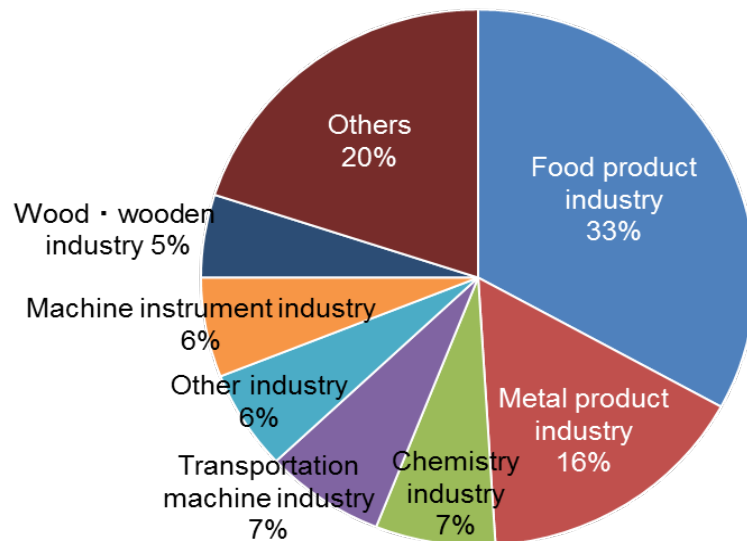
○ Metal product and chemical industry are the next biggest.

<Age type> ○ Unskilled workers' in their 20s accounted for the most accidents.

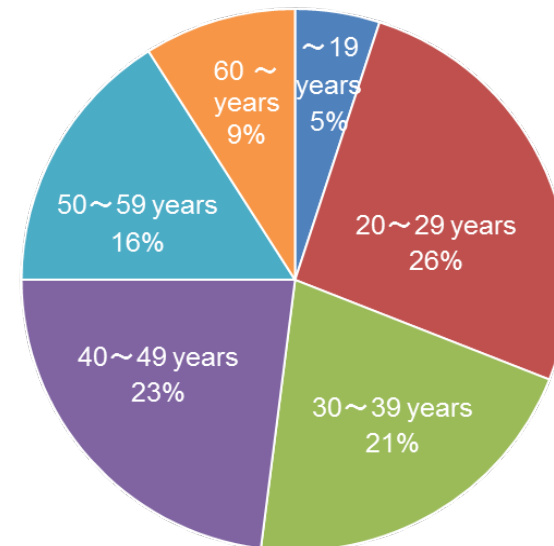
26% in the manufacturing industry.

○ According to the proportion of death and injuries by unskilled workers, unskilled workers age 20~29 years old accounting for about 70% of the death and injuries in all industries.

Breakdown of Unskilled Workers' Death and Injuries by Types of Industry (Manufacturing Industry)



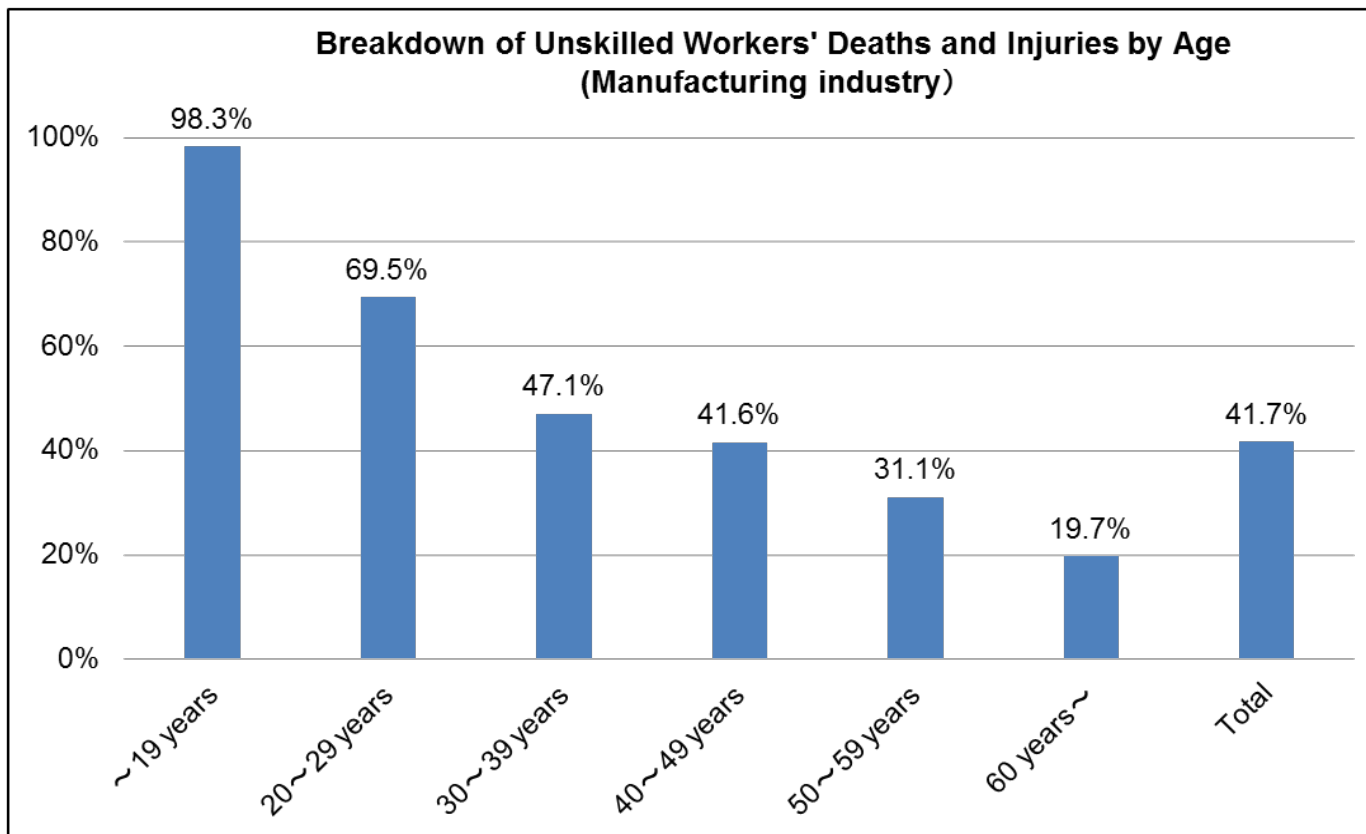
Breakdown of Unskilled Workers' Death and Injuries by Age (Manufacturing Industry)



Source: Ministry of Health, Labor and Welfare

<Breakdown of Unskilled Workers' Industrial Accidents >

The deaths and injuries of manufacturing industry were categorized into different age groups. Looking at the age of unskilled workers, about 70% of the unskilled workers were in the age group of 20~29 years.

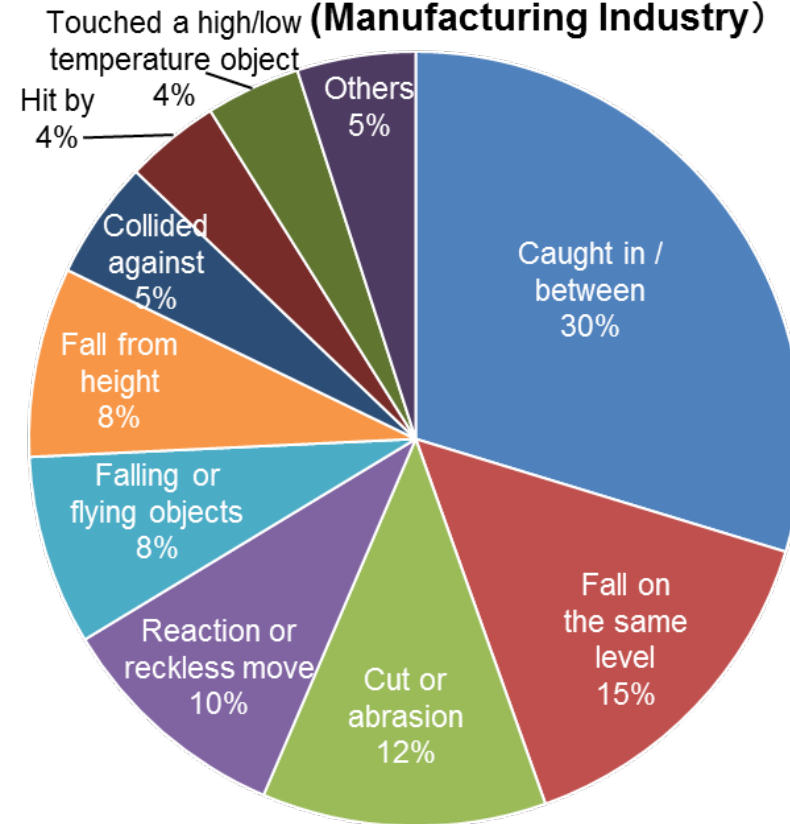


Source: Ministry of Health, Labor and Welfare

<Type of Accident>

- The proportion of “caught in/between” accidents is the largest, accounting for about 30%.
- Following next is “falling on the same level”, “cut or abrasion”, “reaction or reckless move” that causes back injury.

Breakdown of Unskilled Workers' Death and Injuries by Type of Accident (Manufacturing Industry)



Breakdown of Unskilled Workers' Deaths and Injuries (By Type of Accident)

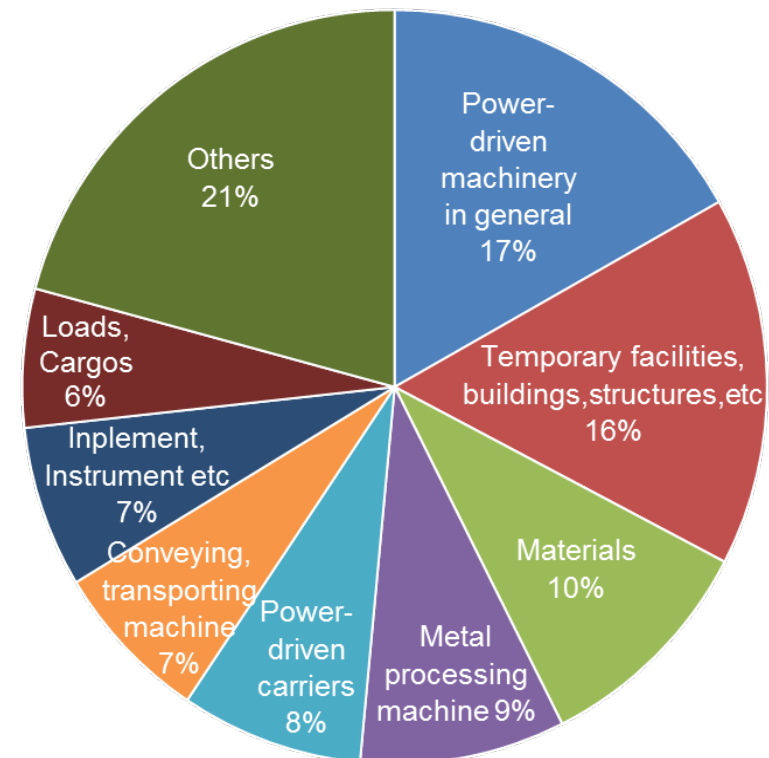
Total	Caught in/between	Fall on the same level	Cut or abrasion	Over-exertion	Falling or flying objects
41.7%	45.5%	34.9%	46.9%	49.0%	40.6%

Source: Ministry of Health, Labor and Welfare

<Cause Agent>

- The largest portion, 17% were caused by power-driven machinery in general.
- Workers were usually caught in/between power-driven machinery in general.
- Following next is fall on the same level in the facilities, buildings, structures, etc


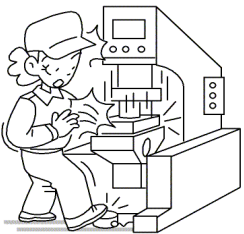


Breakdown of Unskilled Workers' Deaths and Injuries by Cause Agent (Manufacturing industry)








Breakdown of Unskilled Workers' Deaths and Injuries by Cause Agent

Total	Power-driven machinery in general	Temporary facilities, building, structures etc	Materials	Metal processing machine	Power-driven carriers
41.7%	47.8%	35.9%	44.6%	42.4%	40.9%

○ Case of KAMOSHIRENAI = May Be

	<p>① If you wipe the belt conveyer in operation with hands, you may be caught in the machine.</p> <p>※ It's easy to wipe with a cloth when the machine is still running, but the cloth gets caught easily. Thus, causing hands to be suck into the machines and getting hurt.</p>
	<p>② If you hold the metal parts with your hands while doing press processing, you may be caught in the machine.</p> <p>※ It's quick to process by using your foot to press the pedal, but you may missed and thus causing hands to be caught and hurt.</p>
	<p>③ If you move around carrying a pot filled with water, you may slip and fall.</p> <p>※ There are many instances that a floor may be wet, moving too quickly may lead to slip and fall, causing injury to your waist. (A risk of burn is also possible if the pot is filled with boiling water.)</p>
	<p>④ If you walk down the stairs carrying a baggage, you may miss your step and fall.</p> <p>※ If you walk down the stairs carrying a baggage, it is difficult to see your steps and keep balance, thus you may miss a step and fall.</p>

	<p>⑤ When transferring boiling water into other container, you may spill the water and suffer burns.</p> <p>※ As heavy and big objects are difficult to control, it's easy to tilt the container than one thought, resulting in suffering burns on the leg.</p>
	<p>⑥ If you try to carry something that is too heavy, you may hurt your lower back with unreasonable posture.</p> <p>※ If you don't take care of your work posture, when carrying load, you may place pressure on your lower back that may cause backache.</p>
	<p>⑦ During the work process using machine, the workpiece may fly out.</p> <p>※ If you split wood with circular saw, the cut part may fly and hit your abdomen, hence injuring your internal organs.</p>
	<p>⑧ Objects in high places may fall off.</p> <p>※ Due to the bad stacking method, even though the objects are placed in high places, they may collapse and fall over when you are working nearby, hence causing head injury.</p>
	<p>⑨ If you try to take objects at high places using a stepladder, the ladder may collapse.</p> <p>※ If the ladder is not used in a safe way, it may collapse and fall causing injury.</p>

○ Keep in Mind to Wear Proper and Safe Attire

Check your attire in the mirror



Untidy attire is an evidence which indicates that you are not ready for work. So start work with a proper and safe attire !

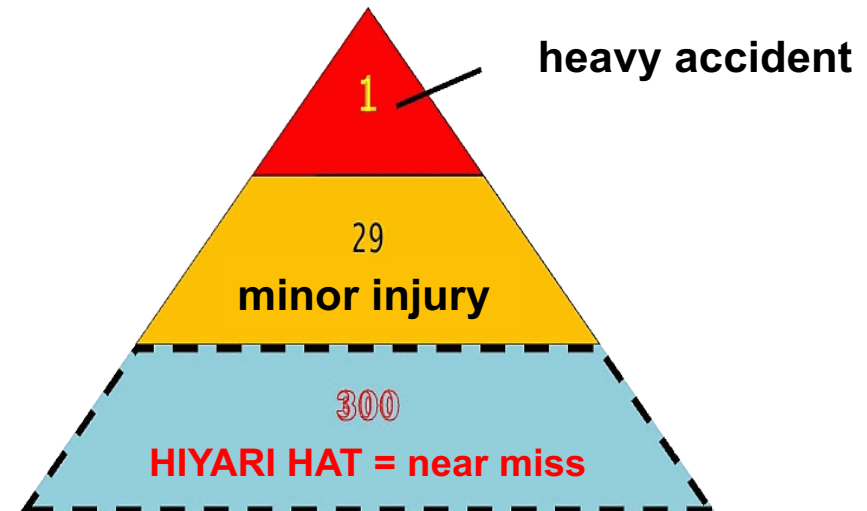
- ◆ Specified safety helmet. Is it scratched?
- ◆ Chin strap is well tighten
- ◆ Attire is clean and neat
- ◆ Do not roll up your sleeves
- ◆ Fasten buttons securely
- ◆ Nothing dangerous in pockets
- ◆ Do not put hands into pockets
- ◆ Specified shoes. Is it worn out?

Untidy attire is an evidence which indicates that you are not ready for work. So start work with a proper and safe attire !

○ HIYARI-HATO Activity

HIYARI HAT (HIYARI = be shocked, HATO = be surprised) Activity is

- A situation that is rather closed to getting injured at work (near miss accident).
- HIYARI HAT Activity is where you raise up situations where you were **shocked** and **surprised**, connect them with disaster prevention at work.
- The picture below (Heinrich Law) represents the results from an investigation and analysis of industrial accidents. By decreasing HIYARI HAT situations, we can decrease serious accidents and injuries.
- Let's look forward to strengthening the awareness of dangers that exist at workplace.



○ K Y T Activity (Training to predict danger)

KYT Activity (K for KIKEN = Danger, Y for YOCHI= Prediction, T for TORENINGU = Training) is to discuss the potential dangers and hazards in the workplace, to strengthen the awareness for “specified danger” and “preventive measures” in order to keep work safety.

4 Levels of K Y T

1. Understand the current situation ... what kind of dangers are there



Try your best to find out all the potential dangers present at workplace.

2. Investigation the real reason ... this is the point of the danger



After listing all dangers, discuss, summarize the reasons of danger and prioritize measurements among your members.

3. Set preventive measures ... what would you do if it were you



Members should think about ways to improve plans and solutions based on the summarized items.

4. Goals Establishment ... we will do like these

Discuss the suggested solutions and reach the agreement, then make a conclusion with your members.

○ Risk Assessment

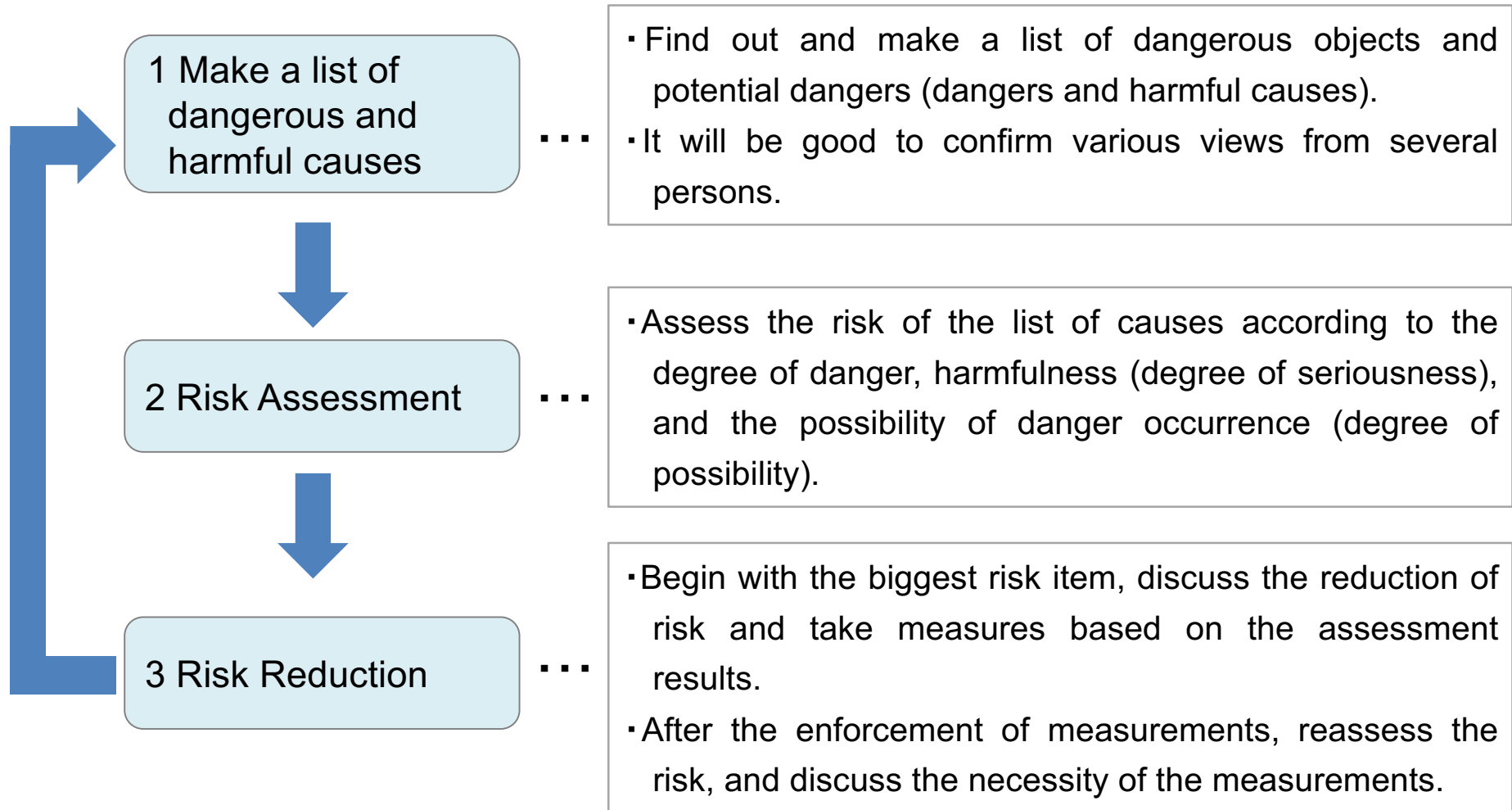
Risk Assessment (Occupational Safety and Health) is

to find out the potential “**danger or harmfulness**” (hazards), and prioritize them according to the degree of danger (**risk**) in order to reduce the risk。

The characteristics are as follows.

- ① It is an effective way to **find out the potential dangers in workplace systematically** when starting with or changing equipment and raw materials.
- ② It is efficient because it **prioritizes the measures based on assessing the risk** resulting from danger and invests in management resources for bigger task.
- ③ **Reducing risk** involves **prioritizing** changing of work methods and inter-locking (safety device, safety mechanism). These equipment measurements are actually basic practices.
- ④ It is an effective way to prevent industrial accidents as much as possible. This will help to prevent hazards from becoming a serious disaster if it happens.
- ⑤ Work safety for unskilled workers could also be effectively enforced based on practicing HIYARI HAT (HIYARI= be shocked HATO=be surprised) information and the procedure manual.

The Idea and Approach of Risk Assessment



○ HIYARI HAT (HIYARI = be shocked HATTO = be surprised) Cases

1 Case of being “caught in/between” by machine

A worker tried to clean the rolling machine that is used for making biscuit pies while the roller was rotating. Because the cover of machine was already removed, his hands were nearly caught in it.

<Preventive Actions>

Be sure to switch off the rolling machine before cleaning the rollers.



2 Case of “fall on the same level”

A worker was setting up the large steel-frame structures with arc welding cords and was moving about in the factory to do so. He almost tripped and fell when his feet were caught by the arc welding cords that were scattered on the floor.

< Preventive Actions >

Make efforts to SEIRI (Sort), SEITON (Set in order). Do not leave cords/hoses scattered on the floor. Roll them up and keep them in a certain place. Make it a rule to take out the cords/hoses only when necessary. Decide on a person in charge.



3 Case of “cut or abrasion”

A worker was cutting the “PP band (poly propylene band)” of the box, which is filled with things in it, with a cutter. He then put it into his pocket. When he tried to reach for the cutter to return to a proper place. The edge of blade stuck out and he nearly had his hands cut off.



<Preventive Actions>

Make sure the blade is well closed by YUBISASHIKOSHOU - pointing and calling or called the occupational safety method).

4 Case of “over-exertion”

A worker kept bending forward to make visual examination of a glass tube at 11:30 am. She nearly twisted her waist when she tried to stretch herself after finishing her work.



<Preventive Actions>

Do some stretching exercise before doing work that put pressure on the waist. Also, have proper break to stretch your waist.