

Report on the Occurrence of Industrial Accidents in FY2021 and Safety Activity Plan for FY2022

April 27 2022

Tokyo Electric Power Company Holdings, Inc.



1 . Major Initiatives on Safety Activity in FY2021

1

Classification	Action Plan	Status of efforts in FY2021
Measures for personnel	1. Activities to improve safety awareness	(1) Submitting and posting safety slogans and posting safety calendars (2) Improving safety awareness through safety events (safety rally, etc.) (3) Conforming to safety rules with the use of the work safety handbook (FY2021), etc.
	2. Improvement in safety management skills	(1) Promoting safety education (heat stroke prevention workshop, until April 5; sharing of accident cases and information, on an as-needed basis) (2) Strengthening the education for work team leaders (implementation of a new curriculum of team leader education) (3) Promoting the education for improving hazard sensitivity (improving hazard sensitivity through a case study and video contents based on CG and VR)
Measures for activities	3. Activities to improve work environments	(1) Visualizing on-site hazard information (drawings, pictures) and considering a hazard protection plan (2) Eliminating hazardous areas through thorough safety inspection and a campaign against accidents (3) Preparing and promoting safety equipment that is effective in eliminating accidents (e.g., full-harness fall prevention equipment, protective goggles, new refrigerants, air-conditioning clothes, and safety shoes) (4) Building the environment for safety education using "1 FOR ALL JAPAN" (e.g., accident simulation CG) (5) Considering office automation for company resting places (in FY2021, creating a development plan)
Measures for management	4. Activities to improve hazard prediction	(1) Promoting on-site hazard prediction activities (identifying unpredictable hazardous areas) (2) Promoting the hazard prediction before employees go to a work site (elimination of employee accidents)
	5. Elimination of hazardous areas and 5S activities	(1) Activities to eliminate unsafe places through safety patrols (2) Cross-sectional check and evaluation in prior safety evaluation (risk assessment)
	6. Independent safety and communication activities	(1) Formulating safety activity plans specific to companies and groups (employees) (2) Strengthening governance through MO (Management Observation) (strengthening of on-site management in close cooperation between partner companies and our company) (3) Safety management and guidance and communication activities at work sites through <u>self-inspection of each organization</u>
	7. Heat stroke prevention activities	(1) Strengthening measures for heat stroke prevention in the period from April to October (e.g., adherence to the rules for heat stroke prevention) (2) Preparing a heat stroke prevention plan for each original contractor and implementing heat stroke management for each type of work

Red letter: additional new rule

TEPCO

■ Measures for personnel

1. Activities to improve safety awareness

- The use of the work safety handbook was spread to workers (✓)
Safety notices in plants require more ingenuity (X)

2. Improvement in safety management skills

- VR and CG video contents were well-received* (✓)
There was a shortage of contents and instructional materials required for safety education for new workers (X)

■ Measures for activities

3. Activities to improve work environments

- Hazard removal activities reduced the number of falling and tripping accidents (✓)
There were many calls* for an environment that allows the use of IT devices in resting places (X)

■ Measures for management

4. Activities to improve hazard prediction

- On-site hazard prediction was conducted for most companies* (✓)
At the same time, there were work sites that did not sufficiently identify risks specific to them (X)

5. Elimination of hazardous areas and 5S activities

- Accidents were on the decrease thanks to prior safety evaluation (✓)
At the same time, there were work sites where safety measures lacked concreteness (X)

6. Independent safety and communication activities

- Sharing of best practices of companies in MO (Management Observation) activities (✓)
The number of accidents increased in particular companies, for which safety activities need to be reviewed (X)

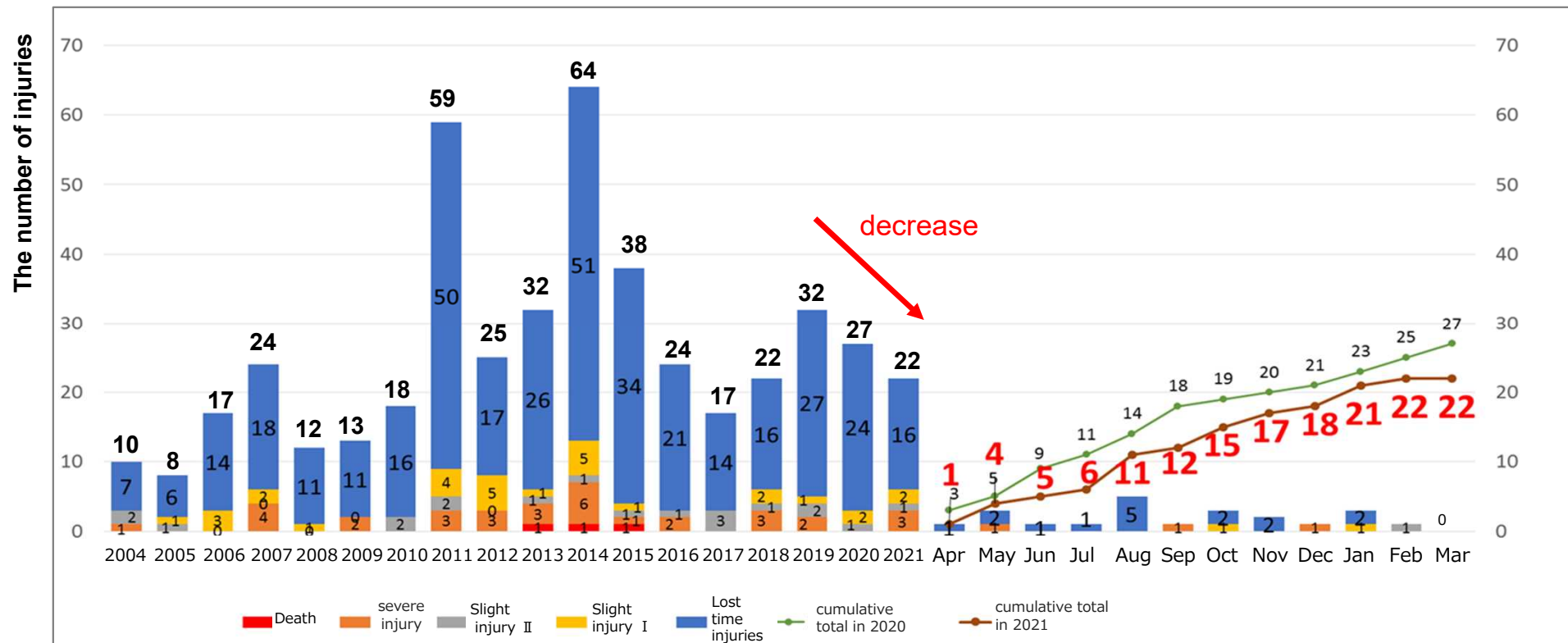
7. Heat stroke prevention activities

- New refrigerants were well-received by workers (✓)
Workers suffered from heat stroke when working with their face fully masked (X)

* September 2021: A survey was conducted on original contractors.

3. Situation of industrial accidents in FY2020 (1/3)

(1) All injuries occurrence situation (All Disasters)



- Disasters in FY2021 were **5 fewer** than in FY2020 (27 ⇒ 22)
- There were **3 more** lost-time accidents in FY2021 than in FY2020. (3 ⇒ 6)
- There were **3 severe injury accidents**, compared with 0 in FY2020. (0 ⇒ 3)
- **The incidence rate of lost-time accidents and more severe accidents** in FY2021 was **0.53** (**0.18 a year earlier**), which was **lower** than the incidence rate of general contractors in 2020, or 1.30 (1.69 a year earlier)*.

* Source: 2020 Survey on Industrial Accidents, by the Ministry of Health, Labour and Welfare in Japan

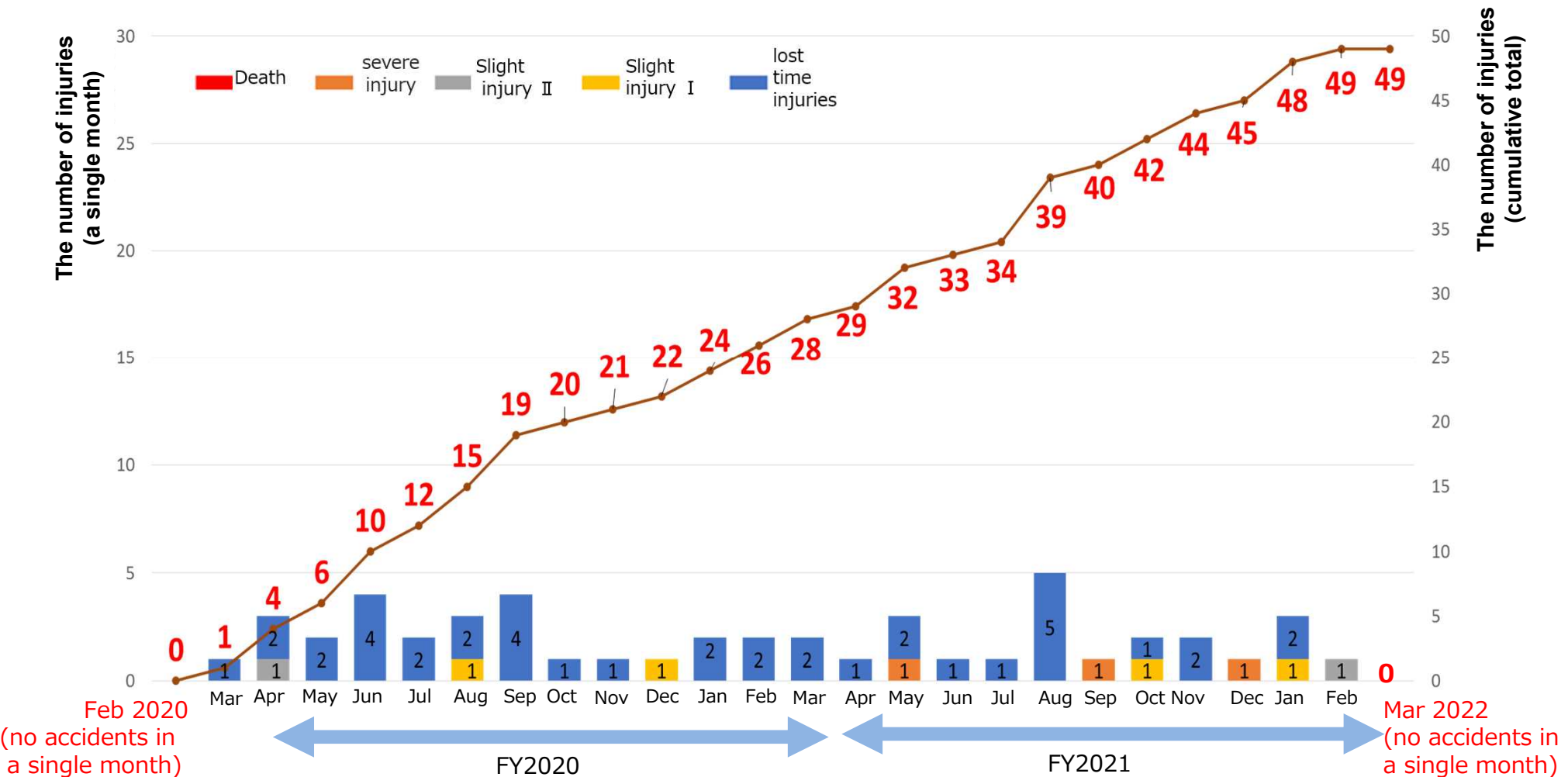
- Incidence rate: The value obtained by dividing the number of deaths and injuries due to industrial accidents by the total working hours and by multiplying it by 1 million.

3. Situation of industrial accidents in FY2021 (2/3)

(2) Status of accidents that occurred in consecutive months

Accidents occurred in 24 consecutive months from March 2020 to February 2022 (see the graph below).

[Graph] Statistics of accidents counted from February 2020 (month with 0 accidents)



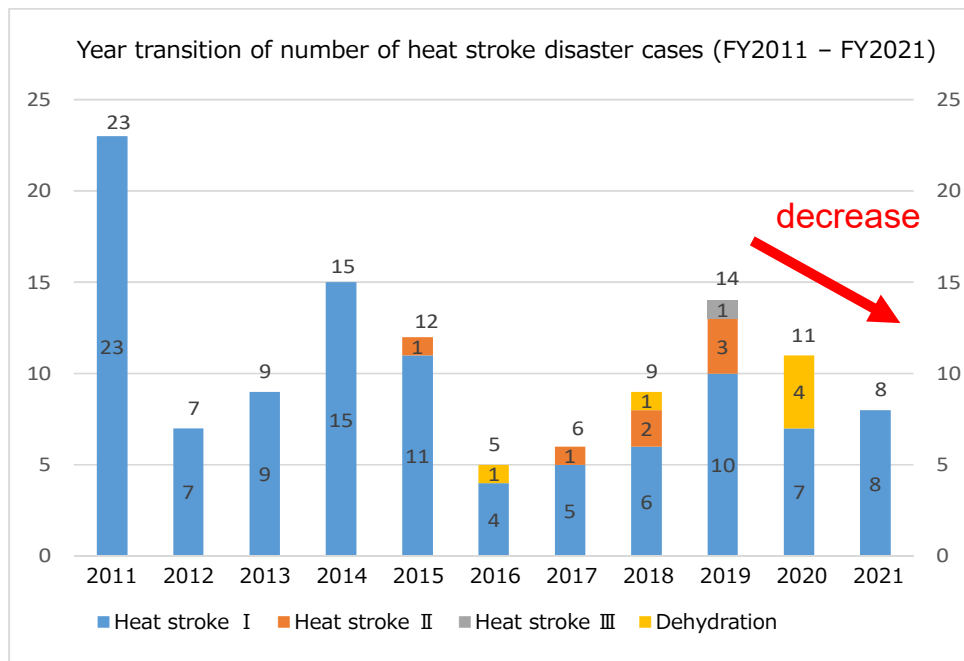
3. Situation of industrial accidents in FY2021 (3/3)

(3) Heat stroke accident

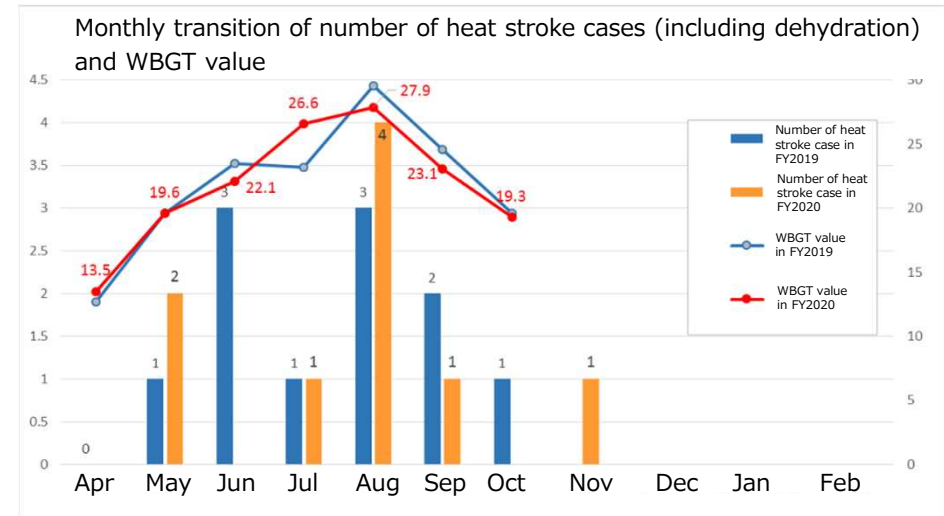
a. Situation at the onset of heat stroke

- Japan was hit by a heat wave for the second straight year, but the number of heat stroke incidents **decreased by 3** from FY2020 (11 $\Rightarrow$ 8).
- All incidents occurred when a worker was working **with the face fully masked**.
- Three workers had **a past medical history** or **a chronic disease**.
- Five **workers had little experience in 1F site (less than one year)**.
- All cases were mild, with heat stroke stage I.

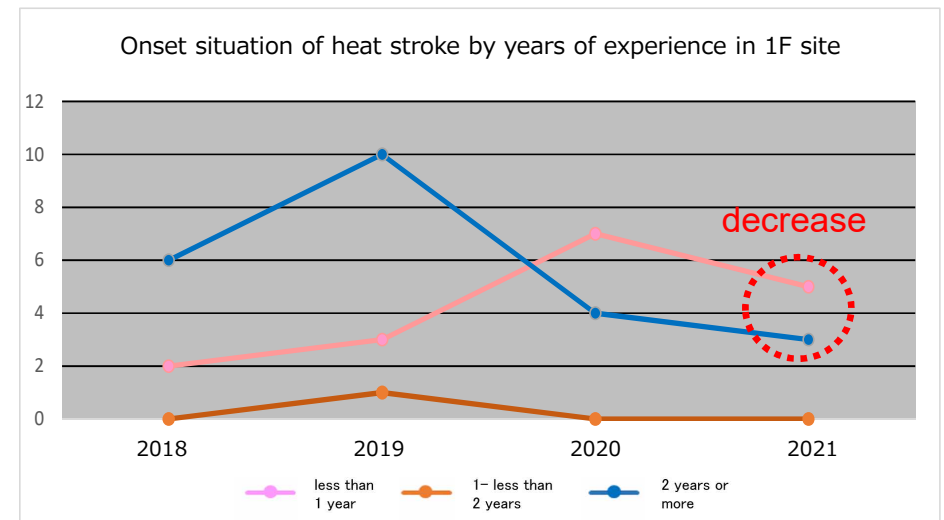
b. Number of heat stroke cases _ year transition



c. WBGT value and monthly onset status



d. Onset situation of heat stroke by years of experience in 1F site



WBGT (Wet Bulb Globe Temperature): Wet Bulb Globe Temperature is an index that focuses on the heat exchange (heat balance) between the human body and the outside air. A heat index that incorporates three factors: (1) humidity, (2) the surrounding thermal environment such as solar insolation and radiation heat, and (3) temperature, which have a large effect on the heat balance of the human body

4. Analysis of disasters occurring in FY2021

■ Similarities between accidents

Most accidents were due to the following factors:

- Managerial factors: Insufficient check in TBM-KY (hazard prediction in a tool box meeting) and defects in procedures (risks not fully identified)
- Physical factors: Defects in safety equipment and tools
- Human factors: Lack of hazard sensitivity

■ Factors behind accidents

Of the factors behind accidents, the following factors are common:

<Original contractors, work team leaders, workers>

- Accidents occurred in **insignificant or neglected work** that was beyond the scope of TBM-KY and supervisor's instructions.
- Inadequate management and handling of **tools and safety equipment**
- The risk of accidents was high in **a work area with a steady flow of people**, such as a high-dose radiation area at work sites for reactors 1 to 4.
- Lack of education and guidance for improving **hazard sensitivity**

<Supervisor>

- There were **variations in the safety management ability** of supervisors, and **risks were not fully identified**.

<General>

- Accidents occurred in **24 months in a row** from March 2020, and most of them were due to insignificant or neglected work or due to **lack of hazard sensitivity**; they could have been avoided.
- Individual supervisors, original contractors, work team leaders, and workers were not sufficiently aware of **preventing accidents**.

5. Safety Action Plan for FY2022 (Overall)

7

Classification	Action Plan	Status of efforts in FY2022	Implementation period	New/Continued
Measures for personnel	1. Activities to improve safety awareness	(1) Staff and workers should make a concerted effort to set a new record of continuous zero accidents and raise safety awareness (visualizing the record of continuous zero accidents and the number of accidents, sharing of accident cases and information, etc.) (2) Submitting and posting safety slogans and posting safety calendars (3) Improving safety awareness through safety events (safety rally, etc.) (4) Conforming to safety rules with the use of the work safety handbook, etc.	(1) Every day (2) Every month (3) Held as appropriate (4) Every day	[Added] (1) [Continued] (2)(3)(4)
	2. Improvement in safety management skills	(1) Of the education for work team leaders, the new curriculum of safety management should continue to be offered (add VR-based dangerous experience) (2) Providing safety education for all workers and staff (e.g., setting the days of safety check on work sites and the days of safety education) (3) Providing safety education in accepting new workers	(1) April to March (2) April to March (3) Held as appropriate	[Reviewed] (2)(3) [Continued] (1)
Measures for activities	3. Activities to improve work environments	(1) Activities to remove hazardous areas (monitor on-site safety and eliminate unsafe places by actively adopting simultaneous 4S, a campaign, thorough inspection of safety equipment and tools, and safety HP) (2) Improving work environments (Long-term remedial action: Investigation, visualization, repair planning improving the office automation environment of company resting places)	(1) April to March (2) April to March	[Reviewed] (1)(2) [Continued] (1)
Measures for management	4. Activities to improve hazard prediction	(1) Promoting on-site hazard prediction activities (identify unpredictable hazardous areas, and for predictable places, revise the procedures) (2) Promoting the hazard prediction before employees go to a work site (elimination of employee accidents)	(1) April to March (2) April to March	[Continued] (1)(2)
	5. Elimination of hazardous areas and 5S activities	(1) Activities to eliminate unsafe places through safety patrols (2) Cross-sectional check and evaluation in prior safety evaluation (risk assessment)	(1) April to March (2) April to March	[Continued] (1)(2)
	6. Independent safety and communication activities	(1) Efforts to ensure safe behavior (2) Formulating safety activity plans specific to companies and groups (employees) (3) MO activity (holding safety meetings; monitoring and supervision of safety in each group by high-level executives) (4) Efforts to implement safety activities in close cooperation between our company and partner companies (Activities to eliminate accidents from companies where multiple accidents occurred in FY2020 and FY2021. Checking and supporting the safety activity plan (PDCA) of companies) (5) Safety management and guidance and communication activities at work sites through self-inspection (6) Building a system by which safety information is passed to on-site workers (make use of "1 FOR ALL JAPAN")	(1) April to March (2) April to March (3) April to March (4) April to March (5) April to March (6) April to March	[Added] (1) [Reviewed] (4)(6) [Continued] (2)(3)(5)
	7. Heat stroke prevention activities	(1) Strengthening measures for heat stroke prevention in the period from April to October (e.g., adherence to the rules for heat stroke prevention) (2) Preparing a heat stroke prevention plan for each original contractor and implementing heat stroke management for each type of work	(1) April to October (2) Submission in April	[Continued] (1)(2)

Red letter : priority measures Blue letter : Measures to be added or reviewed

TEPCO

6. Safety Activities in FY2022 (Priority Activities)

- Considering the results of reviewing and analyzing the safety activities in FY2021, conduct safety activities in FY2022, **with emphasis on activities that are effective** in eliminating accidents.

	1F	Details	Applicable groups
1	Efforts to ensure safe behavior (continue)	a. Improving the ability of site management - Using protection instructions, clarify important points (risks and measures that require particular attention) in order to improve work safety, radiation safety, human errors, and quality control. b. Improving the on-site capabilities of supervisors - Introduce a sheet for on-site capability improvement and have a manager make a check and communicate when a supervisor reads a construction plan and work procedure instructions in order to improve management capabilities. After work is completed, supervisors and persons in charge of original contract work should review the work together and fill in the sheet.	Companies: Responsible persons of original contractors Our company: Responsible GM, supervisors Our company: Supervisors
2	Efforts to implement safety activities together with companies (review)	a. Making efforts to eliminate accidents from companies where multiple accidents occurred in FY2020 and FY2021 - In cooperation with original contractors with a high accident risk, the counterpart (responsible manager) and the occupational safety and fire prevention groups should work together to identify the weaknesses of safety management, set the FY2022 safety activity plan, and turn the PDCA cycle. b. Checking and supporting the safety activity plans (PDCA) of companies - The counterpart (responsible manager) should make a check and give advice at the time of planning safety activities of original contractors and promote the safety activity plans (PDCA) of companies together with them.	Companies: Original contractors (companies designated by the administrative department) Our company: Counterpart (responsible manager), administrative department (occupational safety and fire prevention groups) Companies: Original contractors (all companies) Our company: Counterpart (responsible manager)

- **Persons in charge of original contract work, work team leaders, workers, and supervisors must ensure safe behavior.**

<Approach>

Notified by Isogai in a meeting by the Safety Promotion Association on February 10

1. A thing to implement

For the work on the next day in all works and contracted business, **clarify a concrete point for safe behavior** regarding work safety, radiation safety, human errors, and quality control.

2. Points for safe behavior

The points for safe behavior should indicate **concrete behavior**, not prohibitions.

3. Precautions

The points for safe behavior should be indispensable and essential things (minimum necessary points) and indicate **concrete behavior to do a safe thing**, instead of not doing a dangerous thing.

4. Concrete activities

- Improving on-site capabilities of supervisors:
Using a sheet for on-site capability improvement
- Identifying safety points for work:
Changing items of protection instructions

■ **Persons in charge of original contract work, work team leaders, workers, and supervisors must ensure safe behavior.**

<Points of activities>

[Points for strengthening the ability to grasp the on-site situation through the use of procedures]

- They should walk on-site by themselves and grasp on-site risks.
- In the course of preparing work procedure instructions and a construction program, grasp what the management expects, precautions from the JIT (Just-in-Time) information, risks specific to the work concerned, and on-site risks, and at a prior review meeting, discuss important work risks with work team leaders and workers to achieve a shared understanding.
- Focus on work safety, radiation safety, human errors, and quality control as important points in terms of risks.
- From daily protection instructions, check the important points of the work on the corresponding day, share them with workers through TBM-KY (hazard prediction in a tool box meeting), and check the status of implementation of measures at on-site MO (Management Observation).

[Points for introducing and using a sheet for on-site capability improvement]

- They should walk on-site by themselves and grasp on-site risks.
- In the course of preparing work procedure instructions and a construction program, grasp what the management expects, precautions from the JIT (Just-in-Time) information, risks specific to the work concerned, and on-site risks, and at the time of prior safety evaluation, etc., provide partner companies with those pieces of information and make a record of it.
- Identify on-site risks, focusing on work safety, radiation safety, human errors, and quality control as important points in terms of risks. In addition, clarify and add the viewpoints of waste and procurement.
- After work is completed, information such as the status of implementation of measures for on-site risks should be recorded as points you noticed.
- Managers and GM should designate a title appropriate according to a supervisor, have supervisors create a sheet for on-site capability improvement, observe its results, and feed back what they have noticed.

■ Efforts to implement safety activities together with companies

The counterpart of the department with primary responsibility should support the implementation of companies' safety activities (PDCA) in order to improve work safety, radiation safety, human errors, and quality control.

1. Supporting safety activities intensively for original contractors with many accidents

- The targets are companies where there were multiple accidents in FY2020 and FY2021 and the number of accidents has been on the increase.
- The counterpart (responsible manager) and the occupational safety and fire prevention groups should work together to provide support for, for example, the analysis of reasons why accidents continued to occur and the identification of weaknesses of an organization, and should promote the safety activity plans (PDCA) of companies in close cooperation.
- The goal is to reduce the number of accidents and human errors to zero and break the chains of accidents.
(Activity image) March: Analysis and evaluation, April: Planning and implementation,
October: Semi-annual review, February: Activity evaluation, March: Planning of the next year's activities

2. Checking and supporting the safety activity plans (PDCA) of original contractors

- The targets are companies where there were one or more accidents in FY2020 and FY2021 but the number of accidents has been on the decrease.
- The counterpart (responsible manager) should make a check and give advice at the time of planning safety activities of original contractors and promote the safety activity plans (PDCA) of companies together with them.
- The goal is to keep the number of accidents and human errors at zero.

■ Staff and workers should work as one to aim to set a new record* of continuous zero accidents.

Major causes of accidents include insignificant work, neglected work, and lack of hazard sensitivity. Many accidents could have been prevented easily if workers had a safety awareness and ensured observance of rules.

Implement an activity to have individual supervisors, original contractors, work team leaders, and workers work with safety and zero accidents in mind.

In addition, build a system by which safety information is passed to all workers speedily and accurately.

* Previous record: 101 days from February 20 to May 30, 2018

1. Staff and workers should work as one to set a new record* of continuous zero accidents

- At the morning assembly and morning meeting (MM), announce the number of days of continuous zero accidents.
- Visualize the record of continuous zero accidents and the number of accidents: Set up a dedicated monitor in on-site bus shelters, etc.

2. Building a system to inform all workers of safety information appropriately

- At the morning assembly and MM, use "1 FOR ALL JAPAN" so that the purpose of our safety activities and accident information spread as appropriate.

■ Strengthen safety education to improve the safety management ability and hazard sensitivity of staff and workers.

1. Of the education for work team leaders, the new curriculum of safety management should continue to be offered.

- FY2021: Conducted a case study using the industrial accident cover-up DVD and accident simulation CG videos.
- FY2022: Added VR-based dangerous experience in addition to the contents above.

2. Providing safety education for all workers and staff

- Before the Golden Week holidays, before the Bon holidays, at the end of the year, and at the beginning of the new year, create a day without field work as a day for checking the safety of work sites and providing safety education (accident cases and case studies).
- Introduce heat stroke and accident cases using a CG video.

3. Providing safety education for new workers

- Provide safety education in accepting new workers.

(Example 1) Duty to view accident simulation CG that fits the reality of work by companies

- Falling and tripping, heat stroke, etc.

(Example 2) OE (Operating Experience) information (once a week)

■ Remove hazardous areas that can be a cause of an accident, and improve work environments.

1. Activities to eliminate hazardous areas (short-term remedial action)

- a. Conduct 4S activities at once before the Golden Week holidays, before the Bon holidays, at the end of the year, and at the beginning of the new year.
- b. Before the beginning of work, set safety hold points proactively and eliminate hazardous areas, where supervisors and persons in charge of original contract work should be present if necessary.
- c. Conduct a thorough inspection of safety equipment and tools in parallel with item “a.” above to remove defective items from work sites.
- d. Make sure that a prior-to-use inspection of safety equipment and tools is conducted on a routine basis; also, work team leaders should check inspection records before the beginning of work.

2. Improving work environments (long-term remedial action)

- a. Reflect the results of on-site hazard investigation in hazard maps (pictures, videos, schematic representations).
- b. Plan for repairing unsafe places found in investigation
 - Dark places, and handrails and stairs that have deteriorated
 - Defects in grating and steel floor plates
 - From the estimated risks of hazards found, draw up an appropriate schedule for repair.
- c. Improve the office automation environment of resting places for workers
 - Incorporate ideas based on requests of companies, such as upgrading of LAN, addition of power supplies, and installation of resting places, into the plan.

5 .FY2021 Heat Stroke Prevention Measures Action Plan

Heat Stroke Prevention measures (From April to October)

Red letter: additional new rule

Policy	Purpose	Measure (Action Plan)
Improve awareness of heat stroke (Education)	Implementation of heat stroke education	Implementation of heat stroke education for TEPCO staff/cooperative companies.
		Confirm the education contents for heat stroke prevention measures of cooperative companies
	Dissemination of heat stroke prevention measures	Call for wearing cool vests and ice packs (WBGT value 25°C or higher).
		Strengthen heat acclimation (management of working hours, etc.). Post on information boards and poster, etc.
Wearing a cool vest / ice pack and take rest properly	Prevention of heat stroke and onset	Cool vest, new type ice pack (Yellow zone – overall clothe area, Green Zone – normal work cloths area), refrigerator deployment and management, air-conditioned clothe promotion. (Green zone)
		Install WBGT indicators, measuring instruments and indicators.
		Operate WBGT measuring instruments, indicators (solar system) and clock.
		Secure first aid and emergency transport operation in the emergency medical room (ER). Deployment and management of water trucks.
Adequate heat stroke prevention in collaboration with cooperative companies	Implement the total heat stroke prevention rule	Daily guidance by managers for heat stroke (health condition management, water/salt intake, wearing ice packs etc.).
		Wear ice packs and regulate continuous work in principle. ①WBGT value less than 25 – 28°C (warning): 2 hours or less. ②WBGT value less than 28 – 31°C (strict warning) light work: 2 hours or less. ③WBGT value less than 28 – 31°C (strict warning) heavy work: 1 hours or less. ④WBGT value 31°C or higher (dangerous) in principle, stop work (excluding work permitted by the responsible department).
		Health condition management before work by the managers of cooperative company (measure body temperature, blood pressure, alcohol checker).
		Health check results by the managers of cooperative company, medical history confirmation including heat stroke and consideration according to the situation.
		In principle, work is prohibited hottest hours July 1 – August 31 (14:00 – 17:00).
		Confirm and manage the WBGT values of each work area.
		Strengthening management ① For fully-masked workers, add a correction value of +1°C to the WBGT value. ② For workers at risk of heat stroke*, give consideration to safety measures and add a correction value of +1°C to the WBGT value when they are in the period from the end of the rainy season to the end of September or under high temperature (under an environment where sweating is induced regardless of the season). * Workers who have a past medical history (heat stroke, diabetes, high blood pressure, etc.) and have no experience of working at 1F in the summer season (April to October a year earlier).
		Identify “workers who have no experience of summer work (April – October) in the 1F site”, and implement through heat stroke.
		Face-to-face health condition management before starting work.
		Check the weather forecast in advance (WBGT value, temperature change), and when the temperature change is high, have the workers prevent heat stroke before starting work.
	Reduce physical load due to changes of work environment	Promote changing equipment with less physical load according to each zone.
		Recommend to use sunshade when working outdoor.

9. Safety Policy for FY2022

Safety Policy

Fukushima Daiichi Nuclear Power Plant
aims for **zero accidents** by
removing on-site risks thoroughly
and
ensuring safe behavior
through communication between
employees and workers.

[Target values in FY2022]

1. Serious injury accident: 0
(Preceding fiscal year: 3)
2. Heat stroke: 0
(Preceding fiscal year: 8)

April 2022

Tokyo Electric Power Company Holdings, Inc.
Fukushima Daiichi Decommissioning Promotion Company
Director, Fukushima Daiichi Nuclear Power Plant Station

Ono Kosuke