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Guideline for New Risk Reduction Method in Risk Assessment

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1.Background and Summary

While implementing inherent safety measures in risk assessment, risk reduction activities for high risks (risk level A) are being actively promoted, and 90% of the measures have already been taken. In the future, we will focus on reducing the medium level risk (risk level B), but at this level there are many risks that remain unexamined because there is no measures of inherent safety.

Since the introduction of risk assessment, we have been operating based on the policy that “the risk level should not be lowered only by the measures in Step 3”. Today, we revise the policy and introduce a rule that risk level can be reduced by implementing the measures in Step 3 carefully. However, the policy that risk reduction measures must prioritize intrinsically safe measures does not change.

The rules introduced this time are for the area enclosed by the green line in the figure below. The serious risk which surrounded by the red line requires inherent safety measures to be implemented as before.

“C+” is applied as an index when the risk is reduced only by the measures in Step 3. Although “C+” is an acceptable risk level, it does mean that safety measures still need to be revisited.

5	Frequently	Every day		B3	A1	A2	A3
4	Regularly	Once to twice a week		B2	B3	A1	A2
3	Sometimes	Once to twice a month		B1	B2	B3	A1
2	Rarely	Once to twice a year			B1	B2	B3
1	Almost never	Once a year				B1	B2
0	Never	Zero					
			Uninjured	Minor	Moderate	Major	Fatal
			None	Slight injury	Visit hospital treatment	Serious injury	Death
			0	1	2	3	4

Serious Risk (out of scope)

Scope of this rule

2. Effect of introducing the additional rule

*Stagnation risk reduction activities are activated
*Activities for extracting hidden risks become active

3. Examples of factors that make inherent safety measures difficult

a)Technical obstacles

*Difficulty in replacing of Hazard (Machine/Tools/Tool/Knife/Fiber/Solvent etc.)

*Work by touching high-temperature workpieces and jigs

*Scattering of workpieces and jigs

*Adjusting the diameter of the cable starting end and wire hanging work in the wire drawing machine

b)Unsteady work

*Repair work when the defect product or equipment failure occurs

*Cleaning or cleaning up around equipment

c)Financial obstacles (Unrealistic cost)

*Large and old equipment that needs to be renewed for intrinsic safety

*Site of factory is small

*Very infrequent work such as once every few years

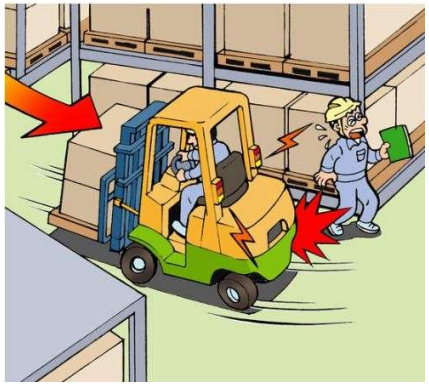
d)Others

Falling from stairs or steps due to lack of attention, impatience, panic, etc., Contact with forklift

<Examples of factors that make inherent safety measures difficult>

Difficulty in replacing of Hazard

Risk due to lack of attention



4.Detailed description of the additional rule

(1)Conventional ; For risks that are difficult to take inherent safety measures, the risk level should not be lowered by the measures in Step 3.

Risk reduction measures by 3-step method

Inherent safety measures

Step1 :Measures by inherent safety design (remove or reduce hazards)
Step2(1) :Measures by safety guard (isolation from hazards)
(2) :Additional protection measures (emergency stop/rescue/fall prevention)

Step3 :Standardizatin/Education and training/Work certification/Warning display/Alarm/Wearing PPT

Safety measures that depend on human behavior

Risk level table in R-MAP method

can be reduced by inherent safety measures

(1)Possibility of occurring

5	Frequently	Every day
4	Regularly	Once to twice a week
3	Sometimes	Once to twice a month
2	Rarely	Once to twice a year
1	Almost never	Once a year
0	Never	Zero

(3)Risk level

	B3	**A1**	**A2**	**A3**
	B2	**B3**	**A1**	**A2**
	B1	**B2**	**B3**	**A1**
		B1	**B2**	**B3**
C			**B1**	**B2**

Uninjured	Minor	Moderate	Major	Fatal
None	Slight injury	Visit hospital treatment	Serious injury	Death
0	1	2	3	4

(2)Injury level

can be reduced by inherent safety measures

(2)Additional risk reduction rule

By implementing the following three items(a~c), it is possible to reduce the risk level even with the measures in Step 3. However, “serious risks” is excluded.

a)**Pre-study**

Although it cannot be implemented, the study on inherent safety should be implemented and the result should be recorded in F-RASS, etc..

b)**Implementation of measures**

When reducing the risk level in Step 3, it is necessary to implement the measures in the combinations shown in the table below.

Standardization	Education & Training	Work certification	PPE	Warning display	Alarm
Required	Required	Select 2 or more			

The level of “Possibility of occurring” and “Injury level” after implementing multiple measures may be decided by each company.

c)**Control method**

In addition to "C", which is an indicator of acceptable risk level, "C+", which is an indicator when risk is reduced by the measures in Step 3, is newly introduced. For the risk of "C+", update the registration data of F-RASS by the procedure of p7. As for “C+” risk, it is desirable to indicate that the “C+” risk exists in the equipment or work area.

<purpose>*In order to clarify that the effect of the measures in Step 3 depends on the person's recognition and actions, so it does not reduce the essential risk.

*To count the number of "C+" risks with F-RASS

(3)R-Map image after revising the risk reduction rule

Add : Risk reduction by Step3

Risk reduction by inherent safety

Scope of this rule

Serious Risk (out of scope)

Risk level table in R-MAP method

(1)Possibility of occurring

5	Frequently	Every day
4	Regularly	Once to twice a week
3	Sometimes	Once to twice a month
2	Rarely	Once to twice a year
1	Almost never	Once a year
0	Never	Zero

(3)Risk level

B3	A1	A2	A3
B2	B3	A1	A2
B1	B2	B3	A1
	B1	B2	B3
		B1	B2

C or C+

Uninjured	Minor	Moderate	Major	Fatal
None	Slight injury	Visit hospital treatment	Serious injury	Death
0	1	2	3	4

(2)Injury level

Risk reduction by inherent safety

Add : Risk reduction by Step3

Measure item of Step3

Standardization/ Education and training/
Work certification/ Warning display/ Alarm/ wearing PPT

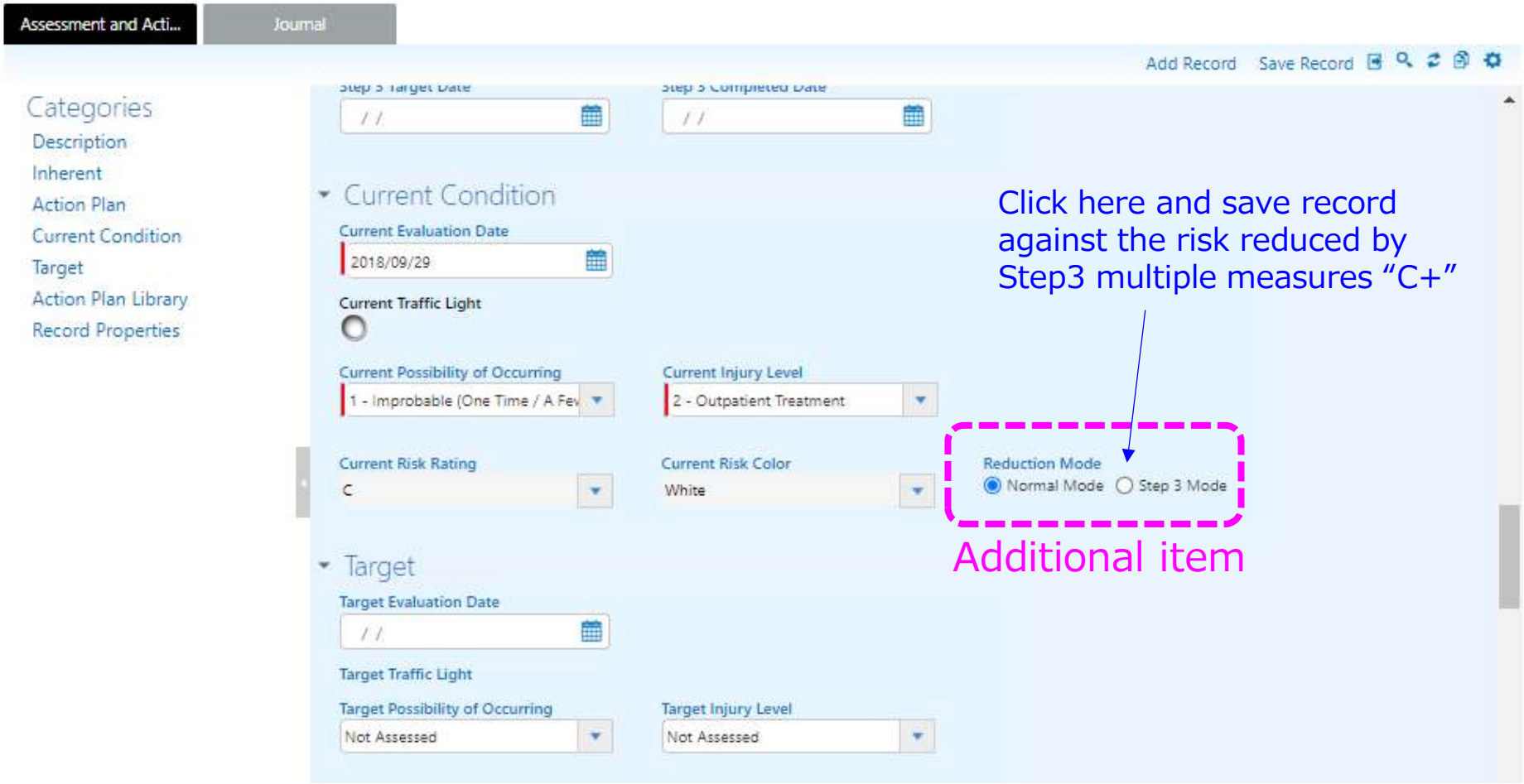
Indicator of acceptable risk level

C : Risk reduction by inherent safety

C+: Risk reduction by Step3 multiple measures

5.Operation of F-RASS against the additional rule

On the "Assessment and Action" page of F-RASS, a button to select [Reduction mode] has been added to the location of the “Current Condition”. If there is a risk of becoming C+ as a result of risk reduction through the Step3 multiple measures, select the [Step3 Mode] circle and save record.



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