



## HEALTH RISK ASSESSMENT (HRA)

SSHE-106-GDL-403

# AGENDA

1. What's HRA?
2. Why HRA?
3. What're Health Hazards in workplace?
4. How to implement HRA?

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# INTRODUCTION

Health Risk Assessment (HRA) is a method to

- Identify,
- Evaluate and
- Control

**health hazards in the workplace** and environmental health which may have a significant impact on the health of the workforce.

# AGENDA

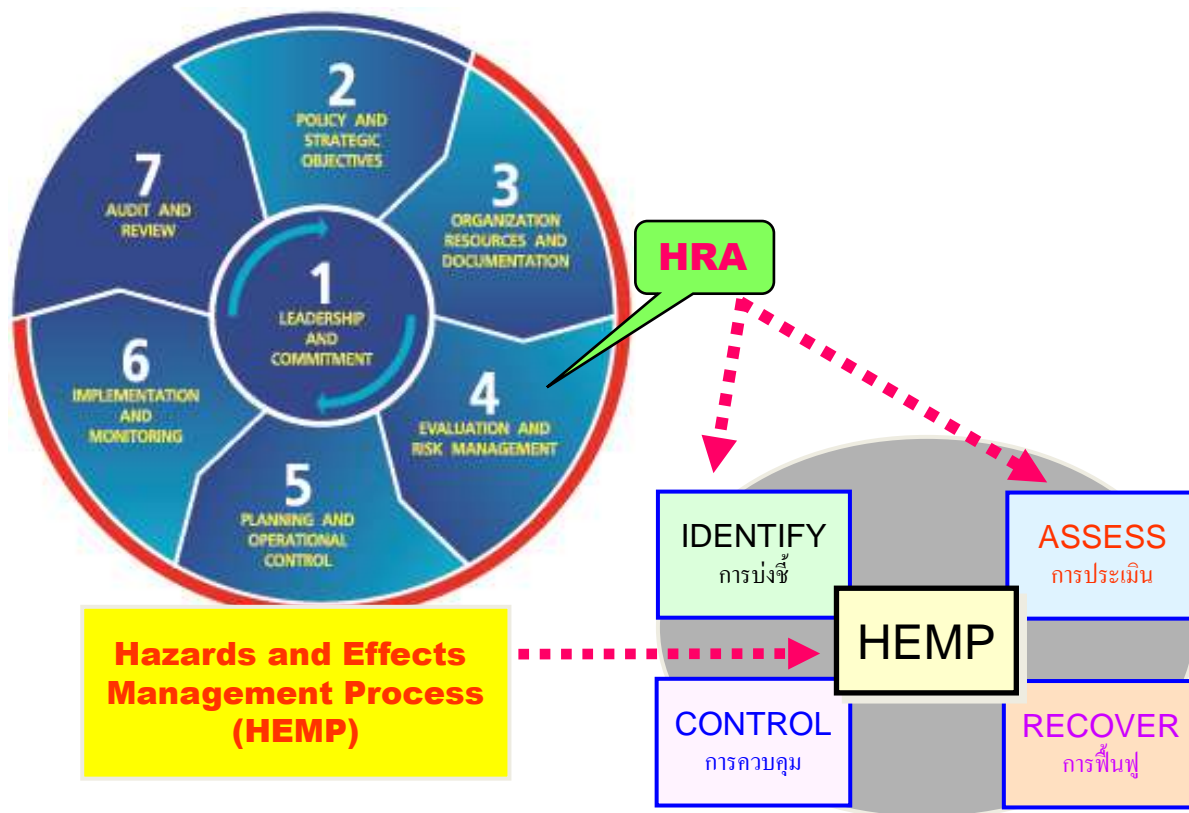
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2. Why HRA?
3. What're Health Hazards in workplace?
4. How to implement HRA?



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# OBJECTIVE

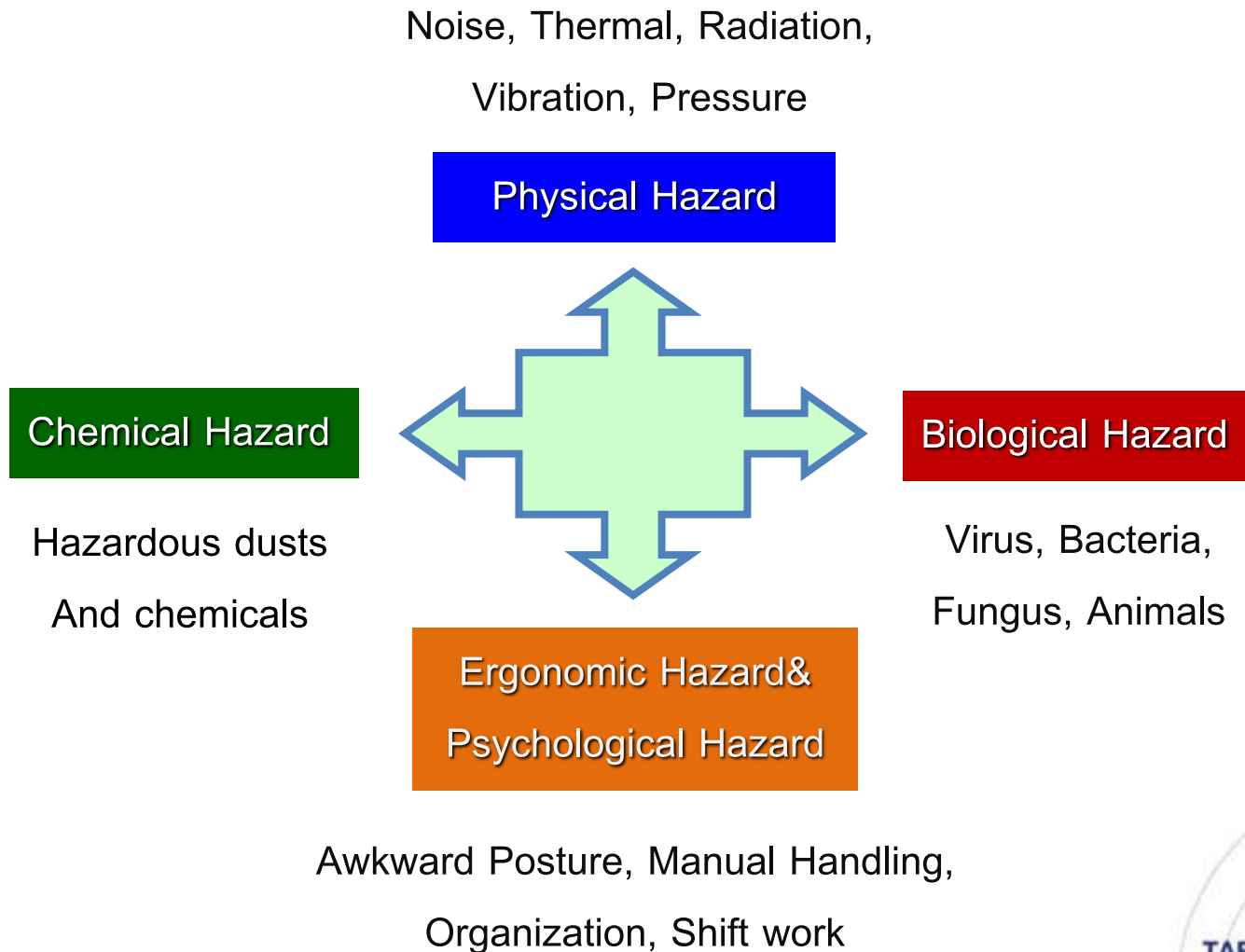
- To Minimize or prevent occupational illnesses in all workplaces
- To implement SSHE MS (SSHE-106-GDL-403)



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1. Why HRA?
2. What's HRA?
3. What're Health Hazards in workplace?
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# HEALTH HAZARD IN WORKPLACE





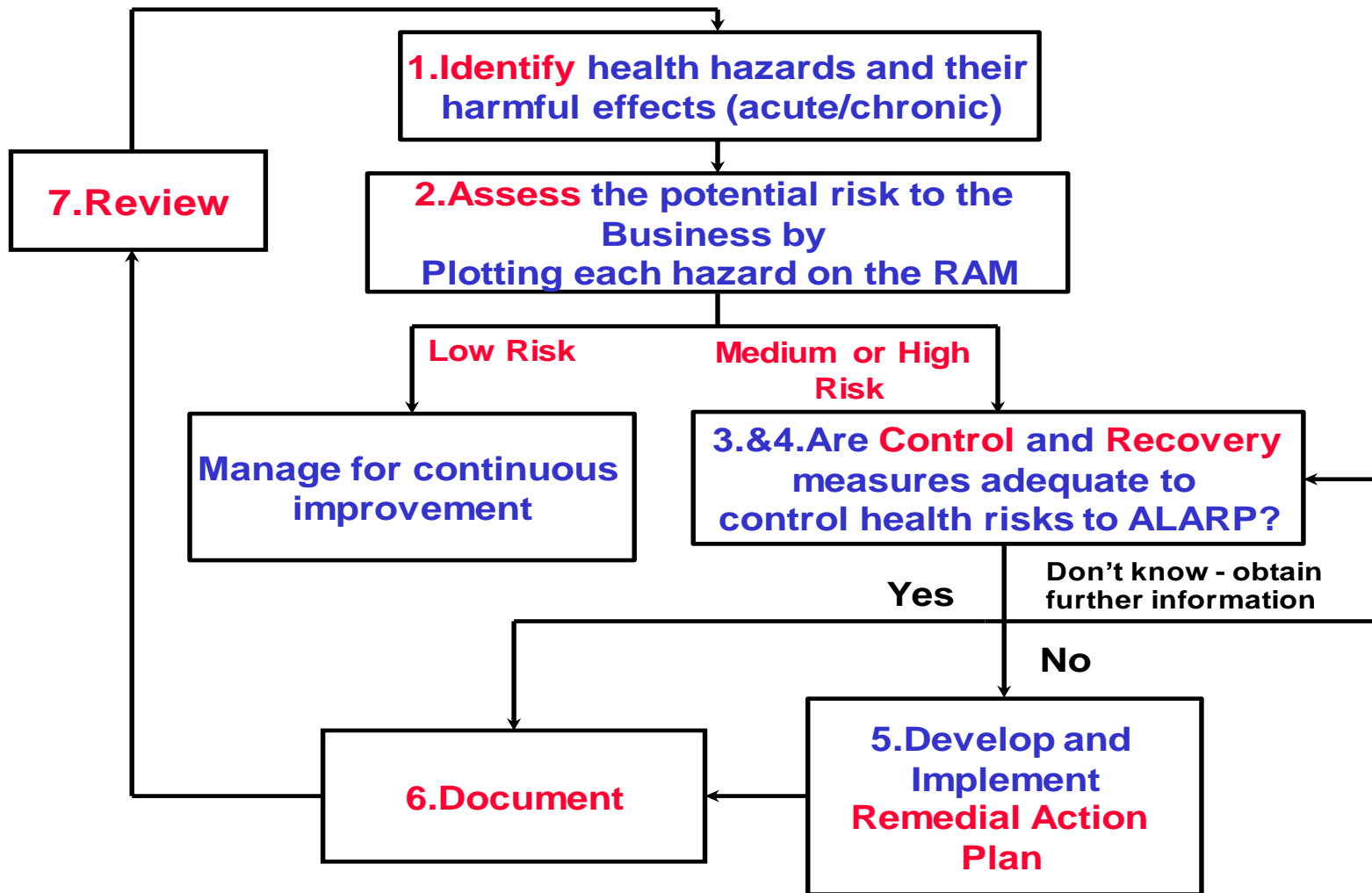
# AGENDA

1. Why HRA?
2. What's HRA?
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# HEALTH RISK ASSESSMENT PROCESS



# HEALTH RISK ASSESSMENT PROCESS

## Preparation:

- Identify Assessment Unit and organization
- Select HRA Team
  - Asset owner (Team Leader)
  - Team members  
(Representative in all positions)
  - Local advisor  
(Site SSHE, Medic, etc.)
  - Specialist staffs  
(Occupational Hygienist,  
Occupational Health Advisor)

Arthit Field – Health Risk Assessment

### 4.2 Job Group in Arthit Field

#### Job Group List

Area/Location	Job Code	Job Group	Number of people
AQP Office	ART01	Arthit Field Manager	2
AQP Office	ART02	Officer, Offshore Planning	2
AQP Office	ART03	Operation Superintendents	2
AQP Office	ART04	Maintenance Superintendents	2
AQP Production Office	ART05	Production Engineer	2
AQP Office	ART06	Process Engineer	3
AQP Clinic	ART07	Arthit Doctor	2
AQP Office	ART08	Maintenance Engineer	3
Maintenance Offices	ART09	ICT Support Engineer	2
AQP Control Room	ART10	Computerize Maintenance Management System (CMMS) Technician	2
AQP Production Office	ART11	Supervisor Production	4
AQP Control Room	ART12	Operator Control Room	8
AQP Control Room	ART13	Production Skilled Operator (Shift)	11
AQP Control Room	ART14	Production Operator (Shift)	19
Laboratory Room	ART15	Laboratory Technician	2
AQP Safety Office	ART16	Safety Officer	2
AQP Safety Office	ART17	Safety Technician	6
Maintenance Offices	ART18	Mechanical Supervisor	2
Maintenance Offices	ART19	Skill Turbine Technician	2
Maintenance Offices	ART20	Turbine Technician	2
Maintenance Office	ART21	Skilled Mechanical Technician	2
Maintenance Office	ART22	Mechanical Technician	11
Maintenance Offices	ART23	Electrical & Instrument Supervisor	2
Maintenance Offices	ART24	Skilled Automation Technician	2

# HEALTH RISK ASSESSMENT PROCESS

## Preparation:

### 4.4 Job Appraisal

#### Job Type/Group

Assessment Unit	Arthit Field	Area or Location Name	AQP Office and APP	
Summary of process description:		Interviewee: Mr. Roger Joseph Holtz		
Code	Description	Overview description of job and task	Number per shift	Basic hours
ART01	Arthit Field Manager	In charge of all operational and safety activities related to production of natural gas and condensate at Arthit field	1	07.00 – 19.00 21/21 days rotation

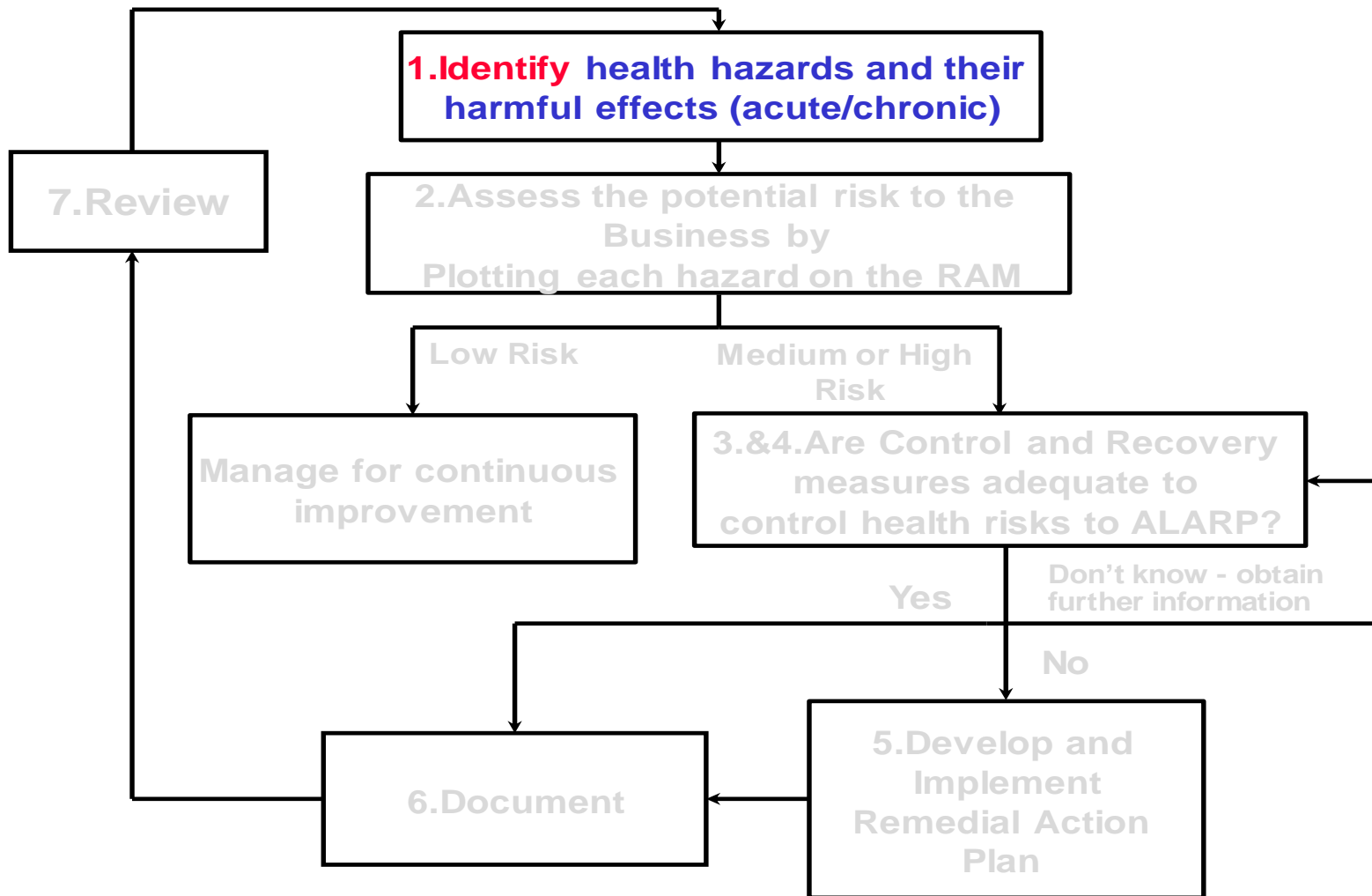
#### Exposure Tasks (to RAM Medium / High Hazards)

Code	Task Name	Working Area
T01.1	Be responsible for day-to-day operational and safety activities of Arthit Field	AQP Office
T01.2	Be responsible for plant operation and safety audit	APP and AWP's



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# HEALTH RISK ASSESSMENT PROCESS





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# HEALTH RISK ASSESSMENT PROCESS

## Task Appraisal

Assessment Unit		Arthit Field			Location/Asset		APP Office							
Task Code		T01.2	Task Name		Be responsible for plant routine check			Job Group		Arthit Field Manager – ART01				
Hazard Exposure					Control Measures		Exposure Level*			ALARP?	Monitoring Needed		RAP	
Hazard Code	Hazard	Exposure Route/Form	Frequency <i>dy/wk/mth/yr</i>	Duration <i>(mins/ hrs)</i>	Existing Control	Effective/ +Yes/ -No ? unsure	Estimated/ Measured Level <sup>1</sup>	Exposure Rating <sup>2</sup>	Above OEL		Exposure Monitor	Health Servicell		
C07	Carbon Dioxide	Inhalation												
C29	Hydrogen sulphide	Inhalation, eyes & skin												
C32	Mercury	Inhalation, eyes & skin												
C37	Natural gas & condensate	Inhalation, eyes & skin												
E01	Awkward posture	Musculo-skeletal												
P01	Noise	Hearing												
P04	Heat stress	Whole body												
P06	Sunlight	Whole body												

1. The Exposure Level may be represented by the Exposure Rating (See Appendix 6.2 – Exposure Chart) – optional tool
2. Combined Hazard and Exposure Rating (See Appendix 6.2 – Exposure Chart) – optional tool to indicate priorities for action

# HEALTH RISK ASSESSMENT PROCESS

## 1. Hazard Identification

Hazard Code	Hazard	Exposure Route/Form
C07	Carbon Dioxide	Inhalation
C29	Hydrogen sulphide	Inhalation, eyes & skin
C32	Mercury	Inhalation, eyes & skin
C37	Natural gas & condensate	Inhalation, eyes & skin
E01	Awkward posture	Musculo-skeletal
P01	Noise	Hearing
P04	Heat stress	Whole body
P06	Sunlight	Whole body

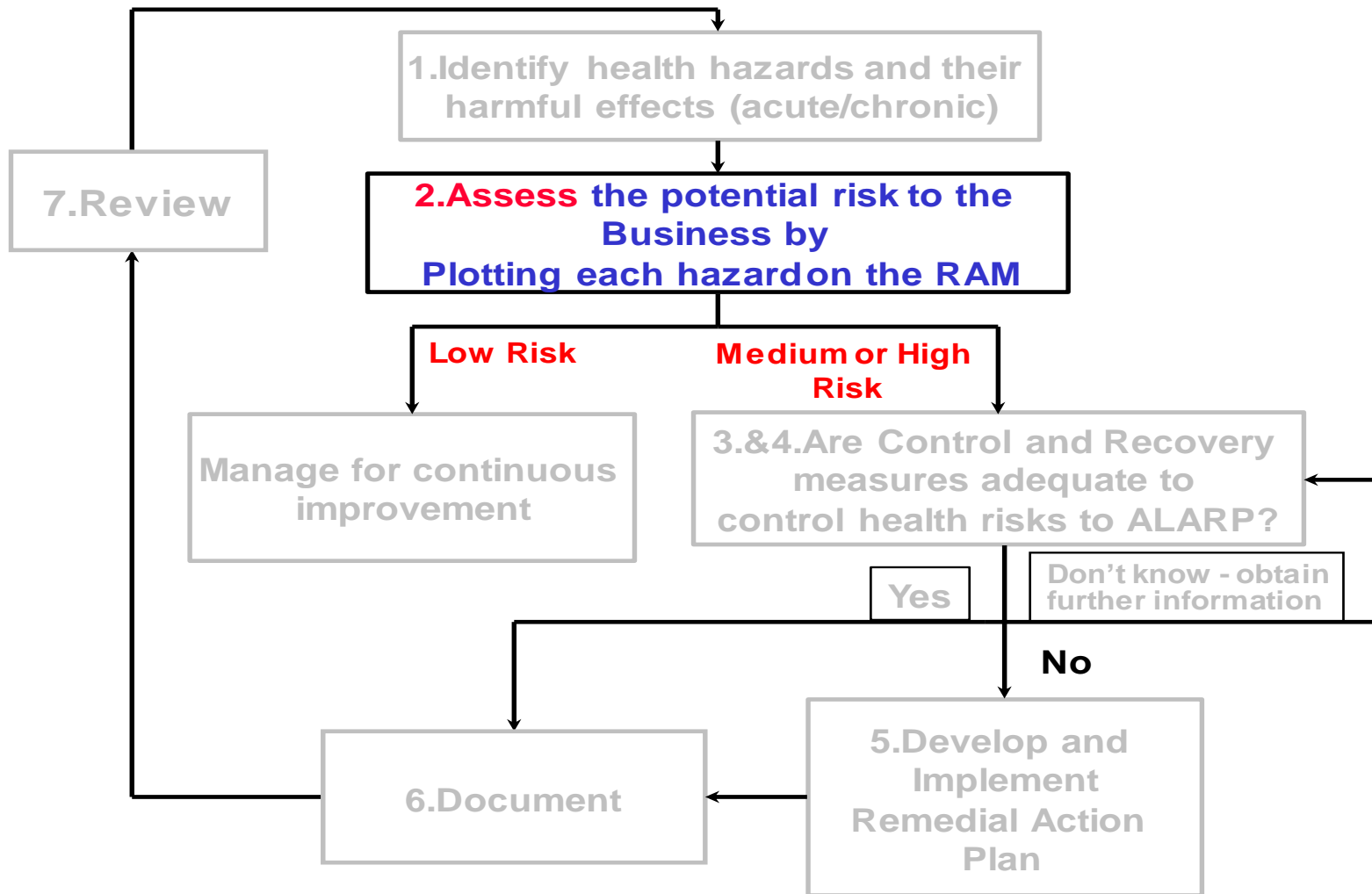
Ask team member to identify of harmful effect by

- ✓ Interview
- ✓ Walk Through Survey
- ✓ Records ( Health record, incident record, chemical Inventory, etc.)



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# HEALTH RISK ASSESSMENT PROCESS







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# HEALTH RISK ASSESSMENT PROCESS

## Task Appraisal

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Hazard Exposure					Control Measures		Exposure Level*			ALARP?	Monitoring Needed		RAP		
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C07	Carbon Dioxide	Inhalation	Non-routine 3 time/week or 1 time/week	Depend on task	Gas Detector, Coverall, Glasses, Gloves and Mask	+	Very Low	4a	No		Done	No			
C29	Hydrogen sulphide	Inhalation, eyes & skin		Depend on task	Gas Detector, Coverall, Glasses, Gloves and Mask	+	Very Low	5a	No		Done	No			
C32	Mercury	Inhalation, eyes & skin		Depend on task	Coverall, Glasses, Gloves and Mask	+	Very Low	4a	No		Done	Done			
C37	Natural gas & condensate	Inhalation, eyes & skin		Depend on task	Gas Detector, Coverall, Glasses, Gloves and Mask	+	Very Low	4a	No		Done	No			
E01	Awkward posture	Musculo-skeletal		Depend on task	NA	+	Very Low	3a	No		No	No			
P01	Noise	Hearing		Depend on task	Ear muffs/ ear plugs	+	Very Low	3a	No		Done	Done			
P04	Heat stress	Whole body		Depend on task	Natural Ventilation and refreshment	+	Very Low	4a	No		Done	No			
P06	Sunlight	Whole body	Depend on task	Coverall, gloves, mask and glasses	+	Very Low	4a	No		No	No				

1. The Exposure Level may be represented by the Exposure Rating (See Appendix 6.2 – Exposure Chart) – optional tool

2. Combined Hazard and Exposure Rating (See Appendix 6.2 – Exposure Chart) – optional tool to indicate priorities for action

# HEALTH RISK ASSESSMENT PROCESS

## 2. Risk Assessment

### Task Appraisal

Assessment Unit		Arthit Field			Location/Asset		APP Office								
Task Code		T01.2		Task Name		Be responsible for plant routine check			Job Group		Arthit Field Manager – ART01				
Hazard Exposure					Control Measures		Exposure Level*			ALARP?	Monitoring Needed		RAP		
Hazard Code	Hazard	Exposure Route/Form	Frequency dy/wk/mth/yr	Duration (mins/ hrs)	Existing Control	Effective? +Yes/ -No ? unsure	Estimated/ Measured Level†	Exposure Rating*	Above OEL		Exposure Monitor	Health Servicell			
C07	Carbon Dioxide	Inhalation		Depend on task	Gas Detector, Coverall, Glasses, Gloves and Mask	+	Very Low	4a	No	Yes	Done	No	No		
C29	Hydrogen sulphide	Inhalation		Depend on task	Gas Detector	+	Very Low	5a	No	Yes	Done	No	No		
Health Risk Evaluation Elements					HRES items							Weight			
C32	Mercury	Individual Susceptibility			Number of exposed persons							10			
C37	Natural conditions	Exposure Duration			Frequency and exposed duration							15			
E01	Awkward posture	Existing Controls			Proper occupational health training							5			
P01	Noise				Availability of PPE and other existing controls							5			
P04	Heat stress														
P06	Sunlight	Threshold Levels			Industrial hygiene/ Health examination results							15			

1. The Exposure
2. Combined Hazard and Exposure Rating (See Appendix 0.2 – Exposure Rating) – optional tool to indicate priorities for action

# HEALTH RISK ASSESSMENT PROCESS

## 2. Risk Assessment

HRES Item	Weight	Health Risk Exposure		
		High	Medium	Low
		5	3	1
Number of exposed persons	10	> 10 prs.	6 - 10 prs.	1 - 5 prs.
Frequency and exposed duration	15	> 30 hrs./wk.	10 - 30 hrs./wk.	< 10 hrs./wk.
Proper occupational health training	5	No training	Provide training but no monitoring of operator's competency	Provide training and monitoring operator's competency
Availability of PPE/Existing Control	5	No PPE/Existing control or Provide PPE/ Existing control but not used	Unsure the effectiveness of existing control	Use PPE/ Existing control
Industrial hygiene / health exam. results	15	No monitoring or no information	Have result but not met std.	100% meet std.

# HEALTH RISK ASSESSMENT PROCESS

## 2. Risk Assessment

$$\text{HRA Score} = \frac{\text{summation of (actual score*weight)}}{\text{summation of (minimum score*weight)}}$$

Interval	Score
1.00 - 1.80	A
1.81 - 2.60	B
2.61 - 3.40	C
3.41 - 4.20	D
4.21 - 5.00	E

Risk Assessment Matrix						
Consequences		Frequency of Occurrence				
		Rare (A)	Unlikely (B)	Credible (C)	Likely (D)	Frequent (E)
Health Hazard Rating	People	Event occurrence is remote and/ or never heard of in the E&P industry	Event occurrence is possible but unlikely or has happened few times in the E&P industry	Event has occurred several times in the E&P industry OR occurred in PTTEP	Event has occurred several times per year in the E&P industry OR more than once per year in PTTEP OR occurred at the location.	Events are frequent in the oil & gas industry OR occurred more than once per year at the location.
Catastrophic (5)	Multiple fatalities					
Major (4)	Multiple LWDC OR one or more Permanent Disability OR 1 Fatality				HIGH RISK	
Serious (3)	Single LWDC OR multiple RWDC			MEDIUM RISK		
Moderate (2)	MTC OR Single RWDC		LOW RISK			
Minor (1)	Minor injury with First Aid					

# HEALTH RISK ASSESSMENT PROCESS

(\*) Effect to people (Workforce and Public)<sup>1</sup>

No.	Description						
1	Minor – Slight injury/illness (First Aid Case-FAC) OR No or slight damage to health e.g. non-toxic dusts (as an acute hazard)						
2	Moderate – Cases of Medical Treatment Case affects, which are reversible e.g. skin irritation, f						
3	Serious - Multiple cases of RWDC OR a single Affecting work performance in the either short o loss of life e.g. noise, poor manual handling task effects, repetitive strain injury.						
4	Major - Multiple LWDC OR one or more perman health damage with serious disability or death e						
5	Catastrophic - Multiple Fatalities from an accid monoxide), known human carcinogens (large e						

		Risk Assessment Matrix					
		Consequences	Frequency of Occurrence				
			Rare (A)	Unlikely (B)	Credible (C)	Likely (D)	Frequent (E)
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	Moderate (2)	MTC OR Single RWDC		LOW RISK			
	Minor (1)	Minor injury with First Aid					

Note: 1. Effect to public shall be considered with the severe

Note: 1. Effect to public shall be considered with the severe perception in the region, public risk may have to be considered one order of magnitude more severe than that of the workforce.



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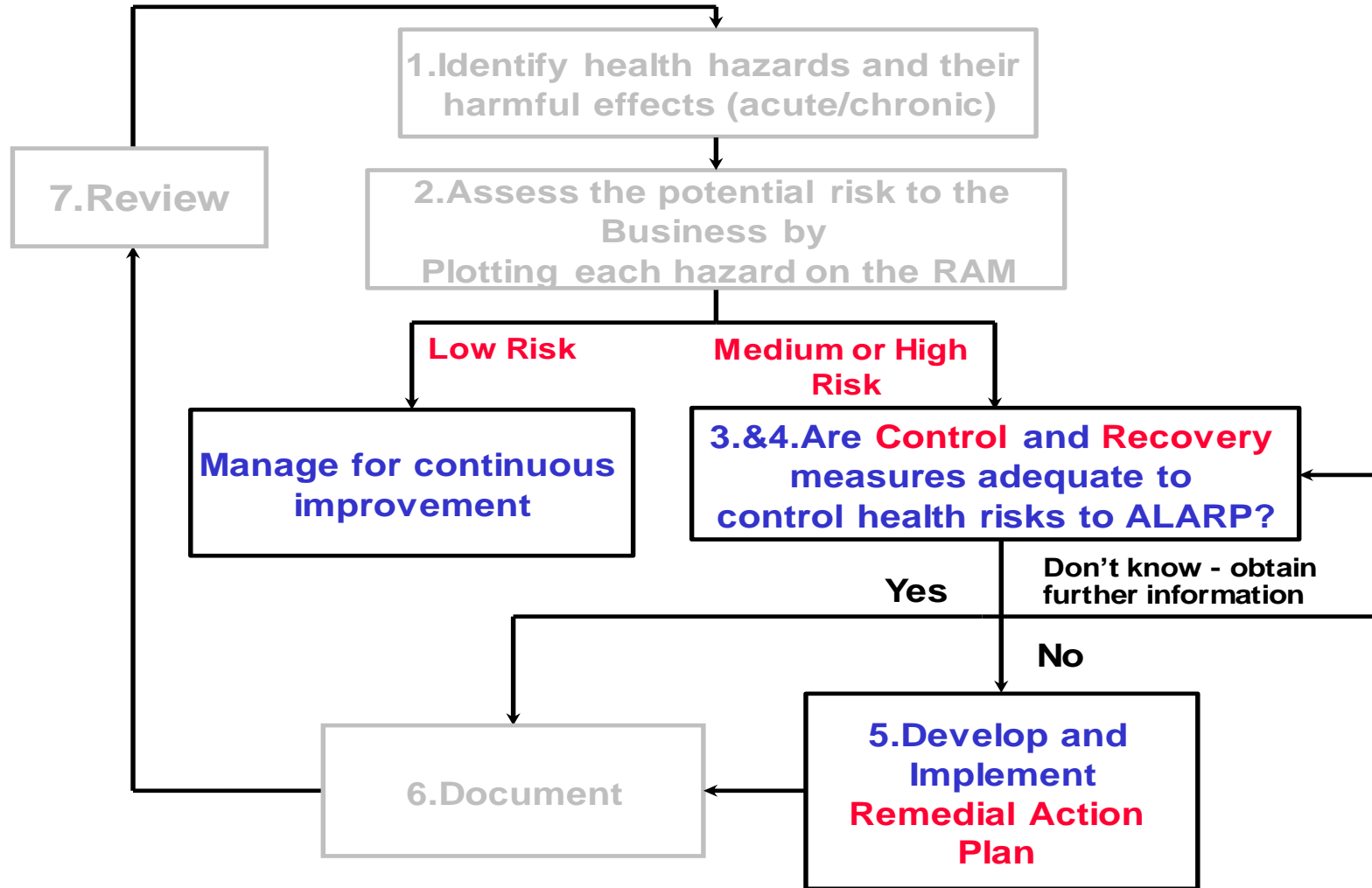
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Assessment Unit		Arthit Field			Location/Asset		APP Office						
Task Code	T01.2	Task Name	Be responsible for plant routine check			Job Group		Arthit Field Manager – ART01					
Hazard Exposure					Control Measures		Exposure Level*			ALARP?	Monitoring Needed		RAP
Hazard Code	Hazard	Exposure Route/Form	Frequency <i>dy/wk/mth/yr</i>	Duration <i>(mins/ hrs)</i>	Existing Control	Effective +Yes/ -No ? unsure	Estimated/ Measured Level <sup>1</sup>	Exposure Rating <sup>2</sup>	Above OEL		Exposure Monitor	Health Service <sup>1</sup>	
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E01	Awkward posture	Musculo-skeletal		Depend on task	N/A	+	Very Low	3a	No		No	No	
P01	Noise	Hearing		Depend on task	Ear muffs/ ear plugs	+	Very Low	3a	No		Done	Done	
P04	Heat stress	Whole body		Depend on task	Natural Ventilation and refreshment	+	Very Low	4a	No		Done	No	
P06	Sunlight	Whole body		Depend on task	Coverall, gloves, mask and glasses	+	Very Low	4a	No		No	No	

1. The Exposure Level may be represented by the Exposure Rating (See Appendix 6.2 – Exposure Chart) – optional tool

2. Combined Hazard and Exposure Rating (See Appendix 6.2 – Exposure Chart) – optional tool to indicate priorities for action

# HEALTH RISK ASSESSMENT PROCESS







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## Task Appraisal

Assessment Unit		Arthit Field			Location/Asset		APP Office								
Task Code		T01.2		Task Name		Be responsible for plant routine check			Job Group		Arthit Field Manager – ART01				
Hazard Exposure					Control Measures		Exposure Level*			ALARP?	Monitoring Needed		RAP		
Hazard Code	Hazard	Exposure Route/Form	Frequency <i>dy/wk/mth/yr</i>	Duration <i>(mins/ hrs)</i>	Existing Control	Effective/ +Yes/ -No ? unsure	Estimated/ Measured Level <sup>1</sup>	Exposure Rating <sup>2</sup>	Above OEL		Exposure Monitor	Health Surveill.			
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3&4  
ALARP?





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# HEALTH RISK ASSESSMENT PROCESS

## Task Appraisal

Assessment Unit		Arthit Field			Location/Asset		APP Office						
Task Code	T01.2	Task Name	Be responsible for plant routine check			Job Group	Arthit Field Manager – ART01						
Hazard Exposure					Control Measures		Exposure Level*			ALARP?	Monitoring Needed		RAP
Hazard Code	Hazard	Exposure Route/Form	Frequency <i>dy/wk/mth/yr</i>	Duration <i>(mins/ hrs)</i>	Existing Control	Effective? +Yes/ -No ? unsure	Estimated/ Measured Level <sup>1</sup>	Exposure Rating <sup>2</sup>	Above OEL		Exposure Monitor	Health Surveill.	
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E01	Awkward posture	Musculo-skeletal		Depend on task	NA	+	Very Low	3a	No	Yes	No	No	No
P01	Noise	Hearing		Depend on task	Ear muffs/ ear plugs	+	Very Low	3a	No	Yes	Done	Done	No
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# HEALTH RISK ASSESSMENT PROCESS

## 5. Remedial Action Plan (proposed & reviewed by HRA Team)

### REMEDIAL ACTION PLAN (cont.)

Assessment Unit: Arthit Field

Hazard Code	Recommendation (using hierarchy of controls and principles of ALARP)	Job Group	Action accepted? If no, give reason	Responsible person	Target Date	Date Completed
E01	<ul style="list-style-type: none"> <li>Ergonomically designed chairs and work station,</li> <li>Ergonomic training for office work every 2 years and</li> <li>Work break and exercise software</li> <li>Small table and chair should be provided in the APP and AWPx (for Automation Team)</li> </ul>	CMMS Technician – ART10 Operator Control Room – ART12 Skilled Turbine Technician – ART19 Skilled Mechanic Technician – ART21 Skilled Automation Technician – ART24 Automation Technician – ART25 Skilled Electrical Technician – ART26 Arthit Support Services Supervisor – ART28	YES	DAF DAF/S DAF/S DAF/M	01/12/14 01/12/14 01/12/14 01/12/14	
E01	<ul style="list-style-type: none"> <li>Ergonomic training for office work every 2 years and</li> <li>Work break and exercise software</li> </ul>	ICT Support Engineer – ART09 Mechanical Supervisor – ART18 E&I Supervisor – ART23	YES	DAF/S	01/12/14	
P01	Noise Monitoring at the blower	Welder Team – ART37	No, apply industrial standard			
P01	The technical review to eliminate the source of Nuisance Noise at control room (night shift) and radio room	Operator Control Room – ART12 Radio Operator – ART29	No, a nuisance noise comes from SSB radio and it is change to temporary frequency. The noise was gone.			
P04	heat stress awareness training	Production Operator – ART14 Deck Crew – ART31 Well Services E-line Team – ART33 Well Services Slick Line Team – ART34	YES	Doctor	01/12/14	
PS02	<ul style="list-style-type: none"> <li>The stress study for offshore work</li> <li>The telephone counseling (Sabaijaidee)</li> </ul>	All positions	YES	Corporate Medical and Occupational Health Team	01/12/14	

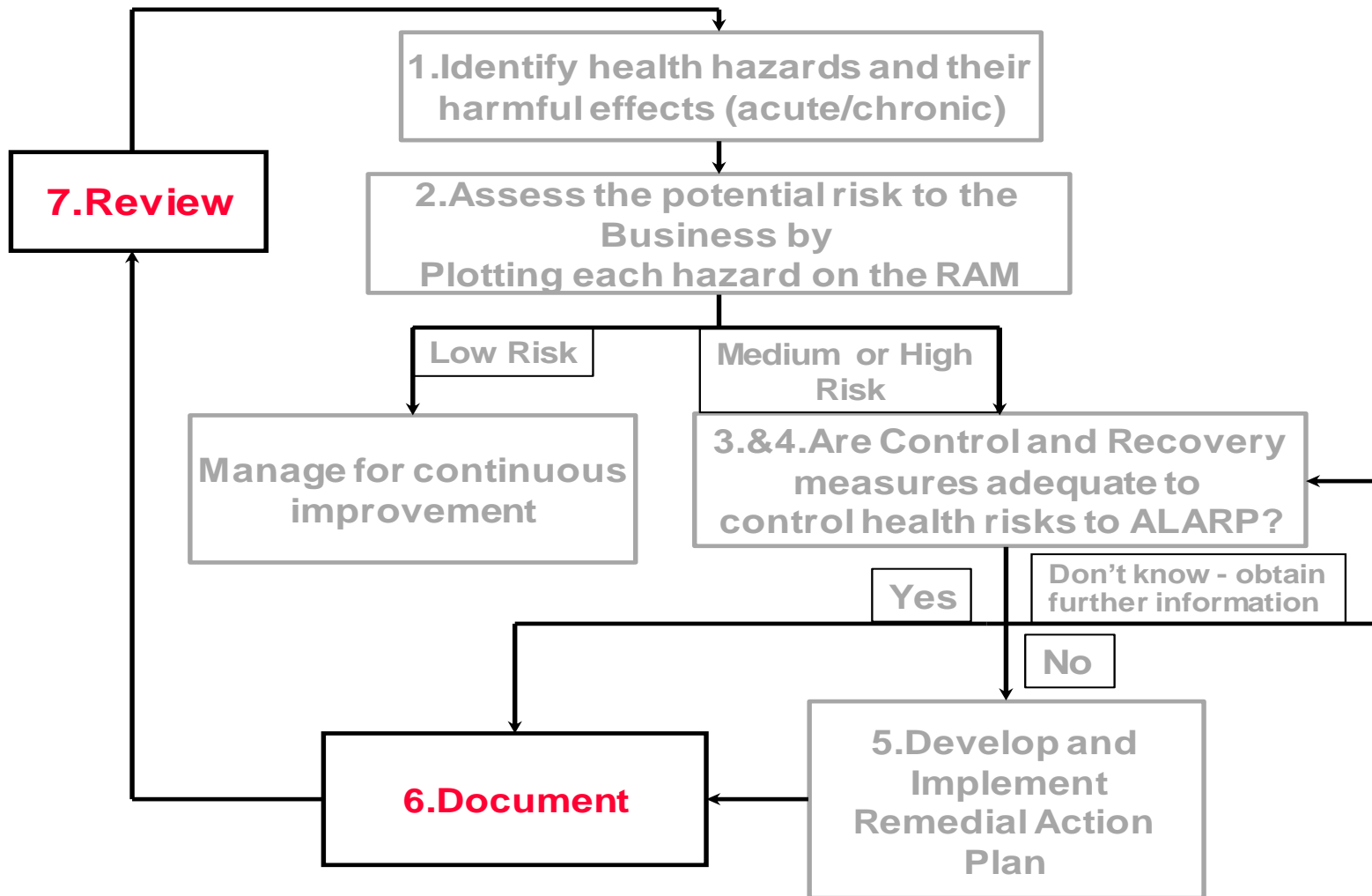
RAP Approval by  Arthit Field Manager

Date: 16 / 5 / 14



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# HEALTH RISK ASSESSMENT PROCESS



# HEALTH RISK ASSESSMENT PROCESS

## Reviews

- Follow up remedial action items
- Changed in process, hazard, legislation etc.
- Changed in controls
- Received New information on the effect
- Occurred Incidents, illnesses, complaints, new knowledge
- Reviewed On an agreed **cycle 5 years** depending on risk



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"To eliminate all incidents and injury through hazards management and behavioral-based safety, minimize of all environmental footprints, and be recognized as an industry leader in SSHE excellence"

