

版別變更記錄： Version Change Record						
版次 Version	日期 Date	變更內容摘要 Description of Change				
B3	12/22/2004	增加英文翻譯 Add English translation				
C1	5/31/2005	增加安衛風險評估類別與方法等說明 Add description of the classification and method of healthy and safety risk evaluation.				
C2	7/4/2005	增加 E-01-A001-F001 職安衛風險鑑別與危害分析管制表之使用時機，修訂“風險評估”與“經濟性”之評分標準 Add description of the use of “Health and Safety Risk Identification and Hazard Analysis control table” (E-01-A001-F001), and modify the evaluation criteria of “Risk Evaluation” and “economy”.				
C3	12/4/2009	為便於 EHS 因數的鑒別，特對 4.3 作修改： To easy identify the EHS factor, revise the section 4.3 1. 刪除原” 4.3 改善優先行動評估”，但保留記錄風險評估值 Remove section 4.3, but reserve "Record Risk Evaluation value". 2. 環境考量面安衛風險鑑表版本進階至 B1 版 Change"環境考量面安衛風險鑑表" revision to B1				
C4	12/10/2017	增加環境考慮類別：LS：生命週期 Add Classification of environmental aspect: LS : Life cycle				
C5	05/10/2018	增加依據設備清單進行評估				
D0	07/22/2020	修改使用表單為E-01-F01，刪除E-01-A001-F001				
D1	07/16/2024	1. 因應新版ISO 14001 & 45001 增加機會鑑別 2. 修改環境考量面/安衛風險/機會鑑別表，並依現況修改內容				
D2	07/14/2025	新增環境考量面及安衛風險鑑別人員定期教育訓練。				
會審單位： Review Board						
核准 Approved By		審核 Reviewed By		製訂 Prepared By		發行 Issue
WinnieY.Lin		Chad Chuang		Monica.Wu		
發行單位 及要求份數 Issued to / # of copies	To / 份 copy	To / 份 copy	To / 份 copy	To / 份 copy	To / 份 copy	
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1. 目的 Purpose:

確認本公司的各項活動、產品和服務之環境考量面/安衛風險與機會，並評估、鑑別可能會對環境與安衛造成衝擊而產生重大影響者，以利環境與安衛管理的施行。

To confirm and evaluate the environmental aspects/health and safety risk and opportunity of activities, products and services of the company, and identify the aspects likely to cause significant impact to the environment, health and safety and greatly affect the environment, so as facilitate the performance of environment, health and safety management.

2. 範圍 Scope

凡與公司之活動、產品及服務有互動關係之環境考量面/安衛風險機會鑑別，均適用之。

Be applicable to the identification of the environmental aspects/health and safety risk and opportunity interactive with the activities, products and services of the Company.

3. 定義 Definition

- 3.1 管理代表：負責召集環境考量面/安衛風險機會鑑別小組執行環境考量面/安衛風險機會鑑別。

Management Representative: Responsible for organizing the environmental aspect/health and safety risk and opportunity identification team for identification of the environmental aspects/health and safety risk and opportunity.

- 3.2 環境考量面/安衛風險機會鑑別小組：由管理代表指定人員組成，負責環境考量面/安衛風險機會鑑別、確認、整合、改善等作業。鑑別人員定期接受教育訓練。

Environmental Aspects/Health and Safety Risk and Opportunity Identification Team: Consisting of the personnel appointed by the Management Representative for identification, confirmation, integration and improvement of the environmental aspect/health and safety risk and opportunity identification. The identification team members regular receive education and training to make sure their knowledge and capability.

- 3.3 環境：組織作業所在的週邊環境，包括了空氣、水、土地、自然資源、植物、動物、人類、及其間的互動關係。

Environment: the environment where the work is operated, including air, water, earth, natural resource, fauna and flora, human and interactions.

- 3.4 環境考量面/安衛風險機會：組織的作業活動、產品或服務中會和環境與安衛產生互動的要項。

Environmental Aspect/Health and Safety Risk and Opportunity identification: possible interaction items of organized operation activities, products or services with the environment, health and safety.

- 3.5 環境與安衛衝擊：任何可完全或全部歸因於組織的活動、產品或服務對環境與安衛產生有利或不利的影響。

Environment, health and safety impact: all positive and negative effects fully or completely attributable to organized activities, products and services on the environment, health and safety.

- 3.6 環境與安衛衝擊分析：指因為環境考量面/安衛風險(因)，而導致環境與安衛改變(果)；衝擊與考量面/安衛風險互為因果關係，而衝擊亦分為正面與負面，藉由衝擊

分析而可釐清本公司各環境與安衛衝擊之顯著性。

Analysis of Impact on Environment, health and safety: the environmental aspects/health and safety risk (cause) result in the change of environment, health and safety (result), vice versa; But the affects can be divided into the positive and negative affects. Therefore, the analysis can identify the importance of the environmental affects, health and safety of the Company.

- 3.7 環境與安衛機會：規劃或改善組織的活動、產品或服務，以對於環境與安衛管理提升績效，消除危害，或降低風險。

Environmental, health and safety opportunities: plan or improve the processes to organized activities, products and services for enhancing the environmental, health and safety performance, eliminate hazards, or reduce risks.

四、作業內容及步驟 Operation Content and Procedure:

- 4.1 環境考量面/安衛風險機會鑑別考量範圍

Evaluation Scope of Environmental Aspect/Health and Safety Risk and Opportunity identification

鑑別小組依據各活動/產品/服務的特性，列舉可能會有較大之環境與安衛影響的範圍，應包括空氣、水、噪音、廢棄物、土壤、生態系統、能資耗用及毒性物質與安全衛生危害等直接與間接環境與安衛衝擊。大致分為：

The Identification Team lists the possible scope of environment, health and safety effects according to the characteristics of activities, products and services, including air, water, noise, scraps, soil, ecosystem, energy consumption, poisonous substances and health and safety hazard to affect the environment, health and safety directly or indirectly. It is principally divided into:

- 4.1.1 污染防治 — 如：廢氣、廢水 ... 等。
Pollution Prevention - such as, waste gas and wastewater... etc.
- 4.1.2 減廢 — 如：含事業廢棄物及生活廢棄物。
Waste reduction - like the industrial wastes and living wastes
- 4.1.3 節約能源及其他資源。
Saving energy and other resources.
- 4.1.4 對供應商、外包商、客戶及社區活動等的間接影響。
Cause indirectly effects to suppliers, outsourcers, customers and community activities.
- 4.1.5 安衛危害特性可區分為化學性、物理性、生物性及人體工程性。具體參閱 7.3安衛危害可能因素。
The characters of health and safety hazard could be classify to chemical, physical, biological and ergonomics, for details could refer to 7.3 Possible Factors of Health and Safety.
- 4.1.4 安衛風險鑑別由各權責部門按作業流程，考量人、機、料、法項目，以FMEA分析手法進行。
The identification of health and safety risk shall be performed by each responsible department according to the operation process and considering items for men, machines, materials and methods, with the analysis method of FMEA.

- 4.2 環境考量面/安衛風險鑑別與環境衝擊分析

Environmental Aspect/Health and Safety Risk Identification and Analysis of Impact

鑑別小組依據所選定之考量範圍，鑑別該項活動/產品/服務的環境考量面/安衛風險。若考量面為單一區域性，則需指明其位置，否則視同整體共同性考量。並需依造流程導向或設備清單進行風險鑑別與分析。

The Identification Team identifies the environmental aspect/health and safety risk

identification of the activities, products and services according to the selected evaluation scope. Risk identification and analysis are required based on the process guidance or equipment list.

4.2.1 鑑別時應考量下列狀況：

When identifying, it is necessary to consider the following situations:

4.2.1.1 屬現在(C)或未來(F)所(可能)發生之狀況

(Possible) Situations of the current (C) or future (F)

4.2.1.2 N：正常操作條件下

Under the normal operation conditions

4.2.1.3 A：非正常操作條件下

Under the abnormal operation conditions

4.2.1.4 E：潛在環境與安衛衝擊及緊急狀況

Potential environment, health and safety impact and emergency situation

4.2.1.5 類別：依其影響型態給予分類。

Classification: classify as per the affecting types:

環境考量類別：

Classification of environmental aspect:

A：空氣污染 Air pollution

L：廢液 Waste liquid

W：污水 Wastewater

HS：有害事業廢棄物 Hazardous industrial wastes

GS：一般事業廢棄物 General industrial wastes

RS：可回收事業廢棄物 Recyclable industrial wastes

N：噪音 Noise

S：工業安全 Industrial Safety

R：能資 Energy

O：其他 Others

LS：生命週期 Life cycle

安衛風險類別：

Classification of health and safety risk:

SF：設施 Facility

SN：一般作業場所情況 Normal Environment

SM：材料 Material

SQ：設備 Equipment

SE：危險能源 Hazardous energy

SG：緊急應變 Emergency

SP：個人防護具 PPE

SR：人體工學 Ergonomics

SH：醫療衛生 Medical and health

4.2.2 鑑別小組將已鑑別之環境考量面/安衛風險，依下列鑑別參數進行環境與安衛衝擊分析，計算「風險因子(ER)」與「風險評估(A)」。鑑別參數如下：

The Identification Team analyzes the effects of environment, health and safety by environmental aspect/health and safety risk analysis be identified according to the following identification parameters, calculates the Risk Factor (ER) and the Risk Evaluation (A):

4.2.2.1 F：發生頻率

Occurrence frequency:

- 1— 幾乎不發生，或每年至多發生一次
Almost with no occurrence, or once a year
- 2— 每三個月內，至少發生一次
At least once every 3 months
- 3— 每個月內，至少發生一次
At least once a month
- 4— 每週內，至少發生一次
At least once each week
- 5— 幾乎每天一次，或持續不斷
Almost once every day or uninterrupted

4.2.2.2 S：影響範圍(詳7.1)

Effect Scope: (See 7.1 for details)

鑑別時需考量此產品/活動/服務是否可控制。

When identifying, evaluate whether this product, activity and service can be controlled.

4.2.2.3 D：影響程度(詳7.2)

Effect Degree: (See 7.1 for details)

4.2.2.4 O：其他因素

Others Factor

對環境改善、防治設備之設置、執行、規劃的程度與必要性評估。

Evaluation on degree and necessity of the environment improvement, installation of prevention equipment, execution and planning

- 1— 已完成並符合要求，或無須改善
Completed and meet the requirement with no need to improve;
- 2— 已執行且完成但未完全符合要求
Implemented and completed but fails to fully meet the requirement;
- 3— 已執行但未完成，仍有加強改善空間
Implemented but fails to complete, leaving the space for strengthening and improvement;
- 4— 已規劃，但未執行改善對策
Planned but fails to implement the improvement countermeasures;
- 5— 尚未規劃與執行改善對策
Not planned nor implemented the improvement countermeasures.

4.2.3 風險因子(ER)計算方式

Calculation of Risk factor (ER)

ER(風險)=F(頻率)*S(範圍)*D(程度)*O(其他因素)

ER(Risk)=F(Frequency)*S(Scope)*D(Degree)*O(Others)

4.2.4 風險評估(A)Risk Evaluation(A)

4.2.4.1 風險評估值(A)區分如下：

The Risk Evaluation Value (A) is shown at the right:

- 0— $ER < 20$
- 1— $20 \leq ER < 60$
- 2— $ER \geq 60$

4.2.4.2 風險評估值(A)為2者皆鑑別為重大環境考量面/應處理之安衛風險，並須考量未來狀況（以二年為未來之考量區間）。

Those with the risk evaluation value of 2 are identified as the significant environmental aspects/health and safety risk that need to be addressed and the future situation (future evaluation period set as 2 years) must be considered.

4.3 重大環境考量面/應處理之安衛風險鑑別與持續改善

Significant environmental aspect/health and safety risk that need to be addressed identification and continuous improvement

4.3.1 依下列條件鑑別重大環境考量面/應處理之安衛風險

To identify the significant environmental aspect/health and safety risk that need to be addressed according to the following conditions

4.3.1.1 有違反相關法規要求者

Those violating relevant regulations.

4.3.1.2 風險評估值(A)為 2者

Those with the Risk Evaluation Value (A) of 2

4.3.2 凡列為重大環境考量面/應處理之安衛風險者，鑑別小組需採取措施進行改善或控制，以減輕對環境的影響或消除危害並降低職安衛風險。採取措施使用以下優先順序：消除、取代、工程改善、及其他管理，如教育訓練、標示/警告、作業管制、緊急應變、監督量測、個人防護具。

For those listed as significant environmental aspects/health and safety risk that need to be addressed, the Identification Team shall take actions to improve or control for mitigating the impact on the environment or eliminating hazards and reducing OH&S risks. The actions use the following hierarchy of implements: elimination, substitution, engineering controls, and other administrative controls, including training, (warning) signs, emergency response, monitoring and measurement, and personal protective equipment (PPE).

4.3 屬環安衛機會 Environmental, health and safety opportunity

鑑別小組評估可規劃或改善組織的活動、產品或服務，而對於該項鑑別之環境與安衛管理有提升績效，消除危害，或降低風險的機會。

The identification team assesses that can be planned or improved the processes to organized activities, products and services for providing the opportunities to improve the EHS performance, eliminate hazards, or reduce risks.

4.3.1 凡列為屬於環安衛機會者，鑑別小組需進一步提出”環安衛管理方案(E-04-A002-F01)”，並提供管理方案編號。

For those listed as Environmental, health and safety opportunities, the identification team shall propose an “Environmental, health and safety management program (E-04-A002-F01)” and provide the coding number.

4.5 法規及其他要求 Legal requirements and other requirements

對於該項鑑別有法規及其他要求之規範

For those listed have regulations from legal requirements and other requirements.

4.6 修訂紀錄/備註 Revision notes

其他修訂紀錄/備註

Other revision notes.

五、使用表單 Tables

5.1 環境考量面/安衛風險/機會鑑別表(E-01-F01)

Environmental aspects, health and safety risk and opportunity identification table (E-01-F01)

六、參考文件 References Documents

- 6.1 環境考量面與安衛風險鑑別程序 (E-001)
Environmental aspects, health and safety risk identification procedure (E-001)
- 6.2 環安衛法規與要求管制辦法(E-06-A001)
Environmental, safety and sanitation legal and requirements control SOP (E-06-A001)
- 6.3 環安衛管理方案作業準則 (E-04-A002)
Environmental, health and safety management plan operation rules (E-04-A002)

七、附件 Appendix

- 7.1 環境範圍表
Environment Scope Table
- 7.2 影響程度表
Effect Degree Table
- 7.3 安衛危害可能因素
Possible Factors of Health and Safety

7.1 環境範圍表

※影響範圍：

範圍	廢水 (L,W)	廢氣 [A, (O)]	廢棄物 [GS,HS,(O)]	噪音 (N)	工業安全 (S)	資源 (R)
1	<ul style="list-style-type: none"> 發生影響範圍 <半徑 3 公尺之圓周小區域 已有合法回收處理 	<ul style="list-style-type: none"> 人工或單機修補作業之少量氣體且在可控制下 Chamber/B/I room 氣體且在控制下 冷氣機自然散逸之廢氣 	<ul style="list-style-type: none"> 一般及有害事業廢棄物委託合格廠商處理 可回收事業廢棄物 (錫渣, 塑膠) 原廠回收 (溶劑空桶) 	<ul style="list-style-type: none"> 距發生源 3 公尺內仍可感受音響 	<ul style="list-style-type: none"> 發生之影響範圍至個人工作區 	<ul style="list-style-type: none"> 資源耗用點僅限個人使用
2	<ul style="list-style-type: none"> 發生影響範圍超過小區域之平面廠區內 委託處理 	<ul style="list-style-type: none"> 人工或單機修補作業之少量氣體且無控制下 機器作業之氣體且在可控制下 Chamber/B/I room 氣體且無控制下 	<ul style="list-style-type: none"> 一般事業廢棄物 	<ul style="list-style-type: none"> 距發生源 3~6 公尺, 可感受音響 	<ul style="list-style-type: none"> 發生之影響範圍至平面廠區內 	<ul style="list-style-type: none"> 資源耗用來自廠區內之製程活動, 資源耗用點在廠區內
3	<ul style="list-style-type: none"> 發生影響範圍於平面廠區外 無合法回收處理 	<ul style="list-style-type: none"> SMT/DIP 或一般作業之氣體且無控制下 	<ul style="list-style-type: none"> 有害事業廢棄物 無法委託合格廠商處理 	<ul style="list-style-type: none"> 可感受音響之範圍在 6 公尺外或廠區外 	<ul style="list-style-type: none"> 發生之影響範圍至廠區外 	<ul style="list-style-type: none"> 資源耗用涉及產品本身設計, 資源耗用點在廠區外

註：廢氣之機器作業意指 SMT、DIP 之融錫作業。單機修補作業如 SMT 元件拔除機。

7.1 Environment Scope Table

Note : The waste gas of machine operation refers the tin melting operation of SMT and DIP. The single machine repair operation refers to the component drawer of SMT and the like.

Scope	Wastewater (L,W)	Waste Gas [A, (O)]	Wastes [GS, HS, (O)]	Noise (N)	Industrial Safety (S)	Resources (R)
1	<ul style="list-style-type: none"> Affected scope (circular area with radius below 3 meters; Legal recycling treatment available 	<ul style="list-style-type: none"> Small amount controllable gas from manual or single machine repair operation; Gas from chamber/B/I room and controllable; Gas from the cooler 	<ul style="list-style-type: none"> Entrust the qualified supplier to dispose general and hazardous industrial wastes Recyclable industrial wastes (Sn residue, plastic) Original plant recyclable (empty solvent drums) 	<ul style="list-style-type: none"> Sensible of the noise 3 meters off the source 	<ul style="list-style-type: none"> Affected scope to working areas of individuals 	<ul style="list-style-type: none"> Resource consumption site only for individuals
2	<ul style="list-style-type: none"> Scope beyond the section of plane plant Outsourced disposal 	<ul style="list-style-type: none"> Small amount uncontrollable gas from manual or single machine repair operation; Controllable gas from machine operation; Gas from chamber/B/I room, uncontrollable 	<ul style="list-style-type: none"> General Industrial Wastes 	<ul style="list-style-type: none"> Sensible of the noise 3-6meters off source 	<ul style="list-style-type: none"> Affected scope to the inside of the plane plant 	<ul style="list-style-type: none"> Resource consumption from the process activities in the plant and consumption site is in the plant
3	<ul style="list-style-type: none"> Affected scope outside the plane plant Without legal recycling treatment 	<ul style="list-style-type: none"> Gas from SMT/DIP or general operation under uncontrollable condition 	<ul style="list-style-type: none"> Hazardous industrial wastes can not be entrusted for disposal by the qualified supplier 	<ul style="list-style-type: none"> Sensible of the noise outside 6 meters or outside the plant 	<ul style="list-style-type: none"> Affected scope to outside the plane plant 	<ul style="list-style-type: none"> Resource consumption from self product design, consumption point is outside the plant

7.2 影響程度表

※影響程度：

類別 程度	廢水 (L, W)	廢氣 [A, (O)]	廢棄物 [GS, HS, (O)]	噪音 (N)	工業安全 (S)	資源 (R)
1	生活污水	<ul style="list-style-type: none"> 熱氣排放 	<ul style="list-style-type: none"> 一般事業廢棄物(生活廢棄物) 可回收事業廢棄物 	間歇性 <ul style="list-style-type: none"> 延續時間<0.5hr/次且每次間隔>1個月 	<ul style="list-style-type: none"> 精神狀態不悅短期可恢復 	<ul style="list-style-type: none"> 能資耗用後，可再生、再回收；即使有廢棄物產生，亦非屬有害性
2	未接觸冷卻水	<ul style="list-style-type: none"> 製程廢氣<排放標準50% 使用 HCFC 修補焊接廢氣 	<ul style="list-style-type: none"> 一般事業廢棄物(生產廢棄物) 有害事業廢棄物量：每月≤5kg 	連續性 <ul style="list-style-type: none"> 延續時間>0.5hr/次且不過過噪音管制標準 	<ul style="list-style-type: none"> 有輕微傷害，但保有工作能力 	<ul style="list-style-type: none"> 能資耗用後，可再生或再回收，且產生有害事業廢棄物
3	事業廢水(液)(間歇性產生)	<ul style="list-style-type: none"> 製程廢氣介於排放標準 51%~100% 使用 CFC 	<ul style="list-style-type: none"> 有害事業廢棄物量：每月>5kg 	連續性 <ul style="list-style-type: none"> 超過噪音管制標準 	<ul style="list-style-type: none"> 有傷殘威脅喪失工作能力 	<ul style="list-style-type: none"> 能資耗用後，無法再生、再回收；即使有事業廢棄物產生亦非屬有害性
4	事業廢水(液)(持續性產生)	<ul style="list-style-type: none"> 製程廢氣超過排放標準 100% 使用不合法之化學物質 	<ul style="list-style-type: none"> 有害事業廢棄物量：每月>30kg 	連續性 <ul style="list-style-type: none"> 超過噪音管制標準，且曾有抱怨 	<ul style="list-style-type: none"> 生命、及公共財產有威脅 	<ul style="list-style-type: none"> 能資耗用後，無法再生、再回收，且產生有害事業廢棄物

7.2 Effect Degree Table

※Effect Degree:		7.2 Effect Degree Table						
		Degree	Wastewater (L, W)	Waste Gas [A, (O)]	Wastes [GS, HS, (O)]	Noise (N)	Industrial Safety (S)	Resource (R)
1	Living sewage	<ul style="list-style-type: none"> Hot vapor discharge 	<ul style="list-style-type: none"> General industrial wastes (living wastes) Recyclable industrial wastes 	Intermittent, lasting time < 0.5hr/each time and frequency > 1month	<ul style="list-style-type: none"> Unhappy mental state, recoverable in a short period 	<ul style="list-style-type: none"> Reproducible and recyclable after consumption of energy, harmless even producing the wastes 		
2	Untouched cooling water	Process waste gas discharge (discharge standard 50%) <ul style="list-style-type: none"> Use HCFC Repair and welding waste gas 	General industrial wastes (production wastes) <ul style="list-style-type: none"> Amount of hazardous industrial wastes each month ≤ 5kg 	<ul style="list-style-type: none"> Continuous, lasting time > 0.5hr/each time and within the noise control standard 	<ul style="list-style-type: none"> Slight injury, with work ability 	<ul style="list-style-type: none"> Reproducible or recyclable after consumption of energy, producing hazardous industrial wastes 		
3	Industrial wastewater (liquid) (intermittent production)	<ul style="list-style-type: none"> Discharge standard of process waste gas is 51%~100% Use CFC 	<ul style="list-style-type: none"> Hazardous industrial wastes each month > 5kg 	Continuous <ul style="list-style-type: none"> beyond the noise control standard 	<ul style="list-style-type: none"> Threat of Disabled, lost the work ability 	<ul style="list-style-type: none"> Non-reproducible or recyclable after consumption of energy, harmless even producing the industrial wastes produced. 		
4	Industrial wastewater (liquid) (continuous production)	<ul style="list-style-type: none"> Process gas 100% beyond the discharge standard Use illegal chemicals 	<ul style="list-style-type: none"> Hazardous industrial wastes each month > 30kg 	Continuous <ul style="list-style-type: none"> Beyond the noise control standard and producing complaints 	<ul style="list-style-type: none"> Threatening life and public property 	<ul style="list-style-type: none"> Non-reproducible or recyclable after consumption of energy, producing the hazardous industrial wastes produced. 		

7.3 安衛危害可能因素

一、化學類

- 霧：懸浮液狀微粒
- 蒸氣：液體揮發形成的氣狀物
- 氣體：無形物質
- 煙：燃燒產生的固態或液態顆粒
- 粉塵：固態顆粒，也可能是纖維狀
- 煙霧：細微的液體/固體物質

二、物理類

- 噪音：有害的聲音
- 溫度：極端高/低溫
- 照明：光線強度
- 振動：運動狀態
- 輻射（電離）：可損壞細胞
- 輻射（非電離）：可發熱
- 氣壓：（高/低）大氣壓

三、生物類

- 細菌：病毒、真菌
- 寄生蟲：植物型/動物型

四、人體工程類

- 工作壓力：憂慮、疲勞
- 過重的工作負擔：體力上/精神上的
- 身體姿勢：拔高/扭曲/伸張
- 新陳代謝周期：加班/上班時間/輪班
- 心理：人際關係/情感

7.3 Possible Factors of Health and Safety

1. Chemical

- Fog: Suspension liquid form particle
- Steam: The liquid volatilizes the vaporous thing formed
- Gas: Invisible material
- Smoke: Burn the solid state or liquid particle produced
- Dust: Solid state particle, or fibrous
- Smog: Slight liquid / solid material

2. Physical

- Noise: Harmful sound
- Temperature: The height / low temperature extremely
- Light: Intensity of light
- Vibration: Motion state
- Radiation (Ionization) : Can damage cells
- Radiation (not ionization) : Can generate heat
- Atmospheric pressure: (high/low) atmosphere pressure

3. Biological

- Bacterium: Virus , fungi
- Parasite: Plant type / animal type

4. Ergonomics

- Working pressure: Worried , tired
- Overloaded work : Physical / spiritual
- Body gestures: Lift / twist / uphold
- Metabolism cycle : Work overtime /work hours /in shifts
- Psychology: Interpersonal relationships / emotion