



Strengthening Combustible Dust Safety in Workplace

Responsible Care Approach to Combustible Dust Safety

30 July 2025

Mr Tan Boon Hua

General Manager, Empire Manufacturing



Introduction of Food Empire

16 Sep 1982

Incorporated as
Future Enterprises Pte Ltd

Listed on SGX

on 27 April 2000

More than
200 products
manufactured and
marketed

Products sold in
more than
60 countries

Key Markets

Russia, Vietnam,
Ukraine and Central Asia

23

Offices worldwide

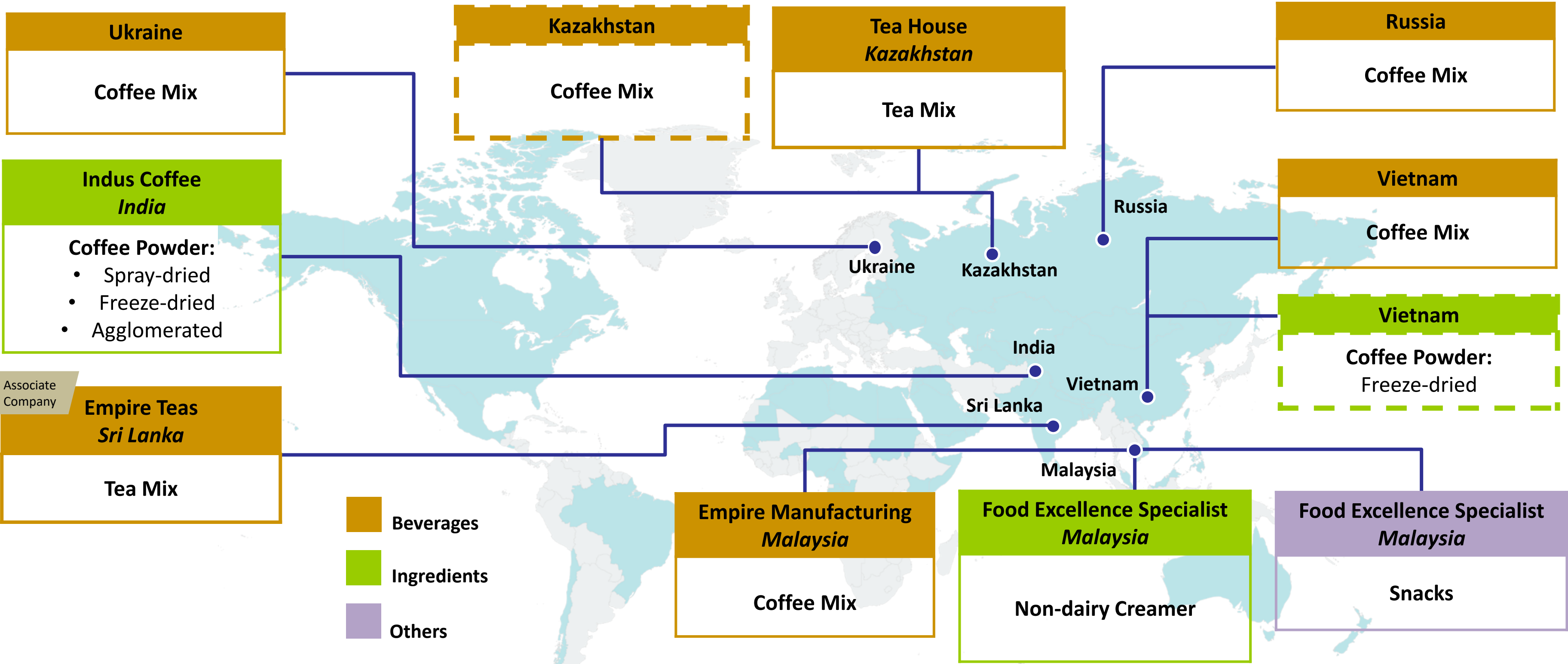
4,450

Employees

9

Manufacturing facilities
All factories are ISO and
HACCP awarded

Our Manufacturing Facilities





Empire Manufacturing Sdn Bhd

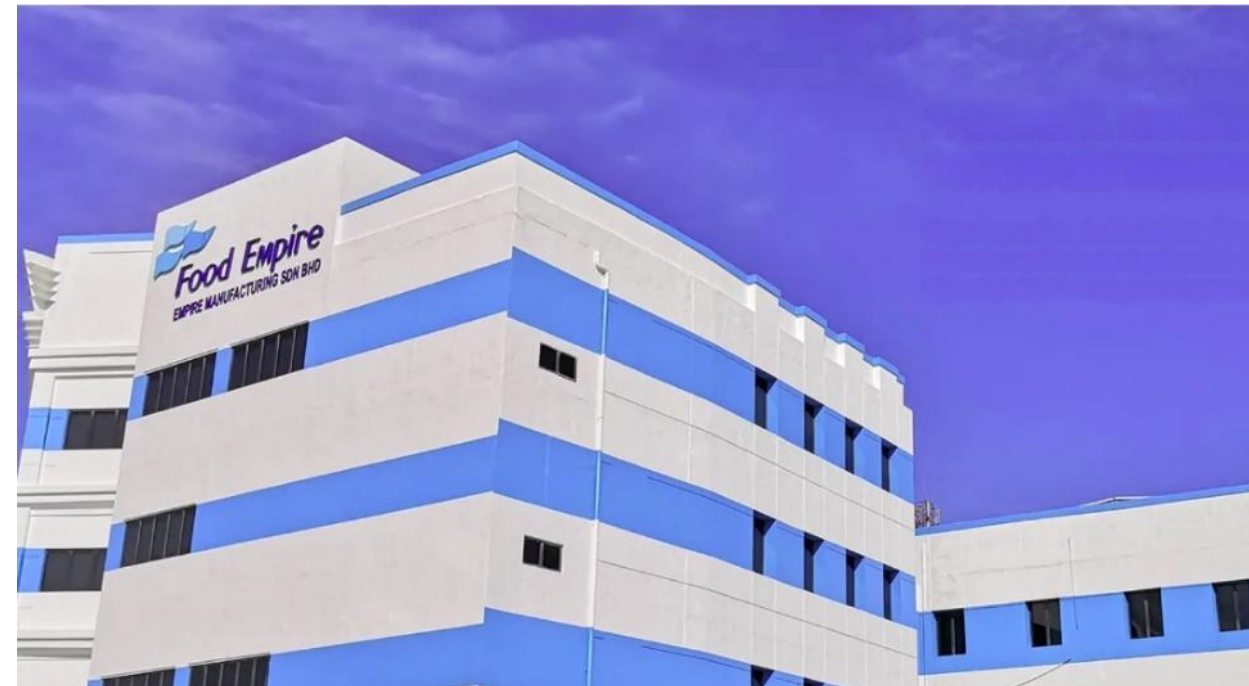
Subsidiary of Food Empire

Established in 2014

Located in Klang

Product Categories

- Coffee mix
- Chocolate mix
- Tea mix
- Cereal mix



Content

1

Why is combustible dust safety critical for manufacturers?

2

How can we minimise the risks?

1

Why is combustible dust safety critical for manufacturers?

Real Risks

Dust Explosions

Fires

Injuries

Deaths

Damage

8 people killed in factory dust explosion in China's Jiangsu

GreenWatch Desk Fire 2024-01-20, 11:23am



HazardEx - Dust explosion at Turkish pasta factory kills one, injures 30

This is an archive article published on May 31, 2017

Vietnam: Dust explosion rocks Formosa steel plant that caused toxic spill

The explosion was caused by the combustion of fine dust particles in the air as a result of an equipment malfunction

1

Why is combustible dust safety critical for manufacturers?

Key Challenges in SME Manufacturing

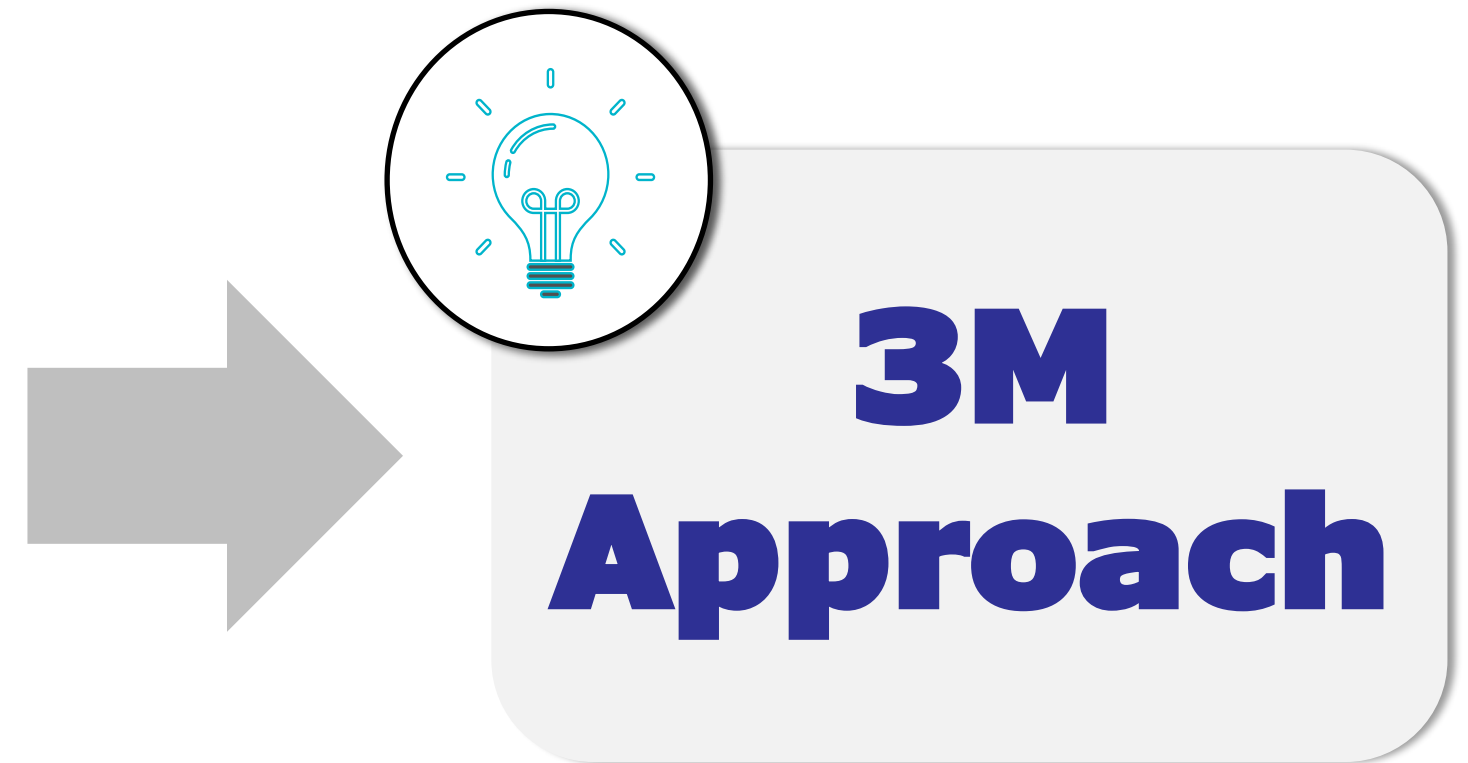
Lack of awareness of dust hazards

Poor housekeeping practices

Inadequate ventilation and controls

No formal Dust Hazard Analysis

Cost and Resource Constraints



2

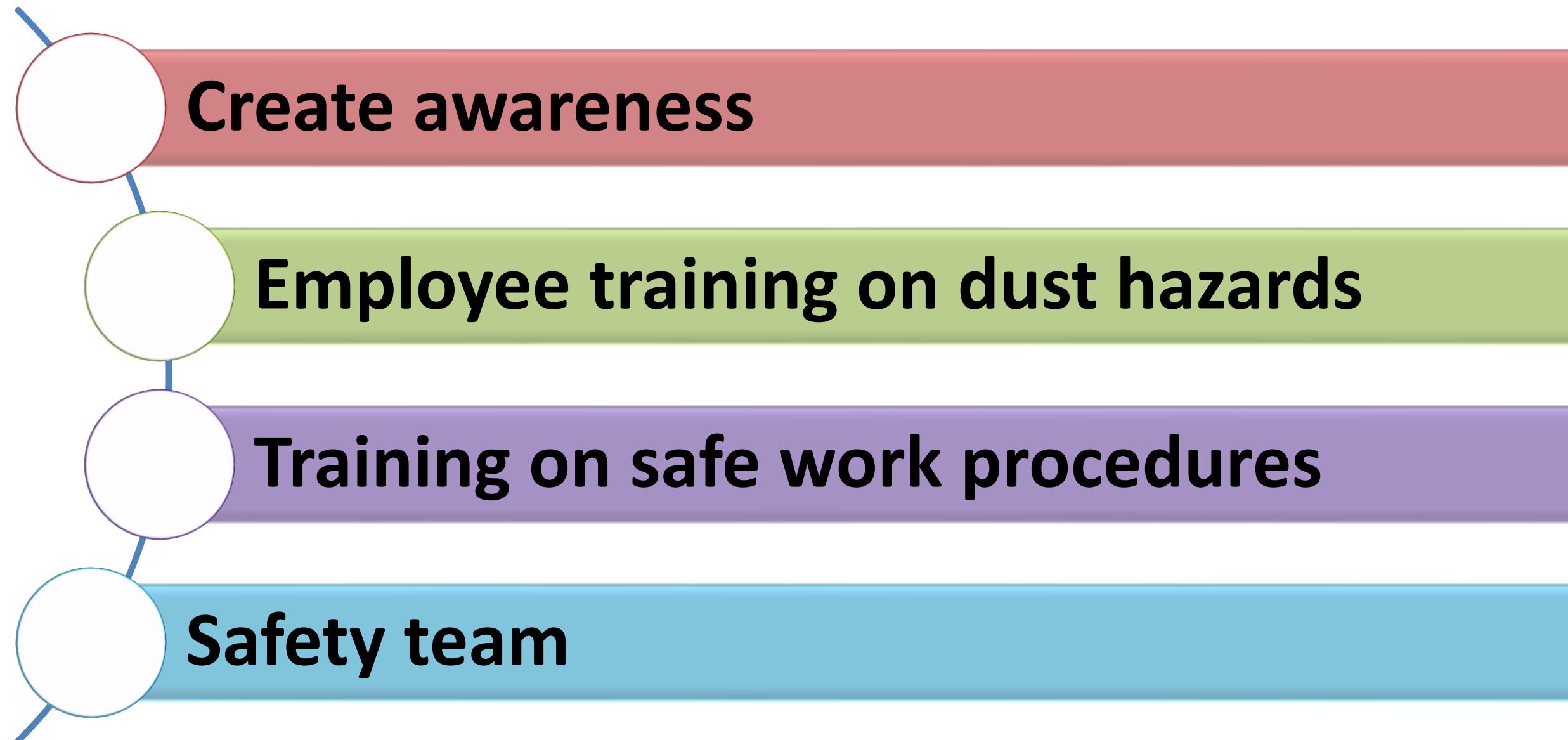
How can we minimise the risks?



3M
Approach

1

Man



3

How can we minimise the risks?



**3M
Approach**

Annual Safety Training & Briefing

1
Man



2

How can we minimise the risks?



3M
Approach

Fire Safety Training & Awareness – Evacuation Drill

1
Man



2

How can we minimise the risks?



3M
Approach

Fire Safety Training & Awareness – Firefighting Training

1
Man

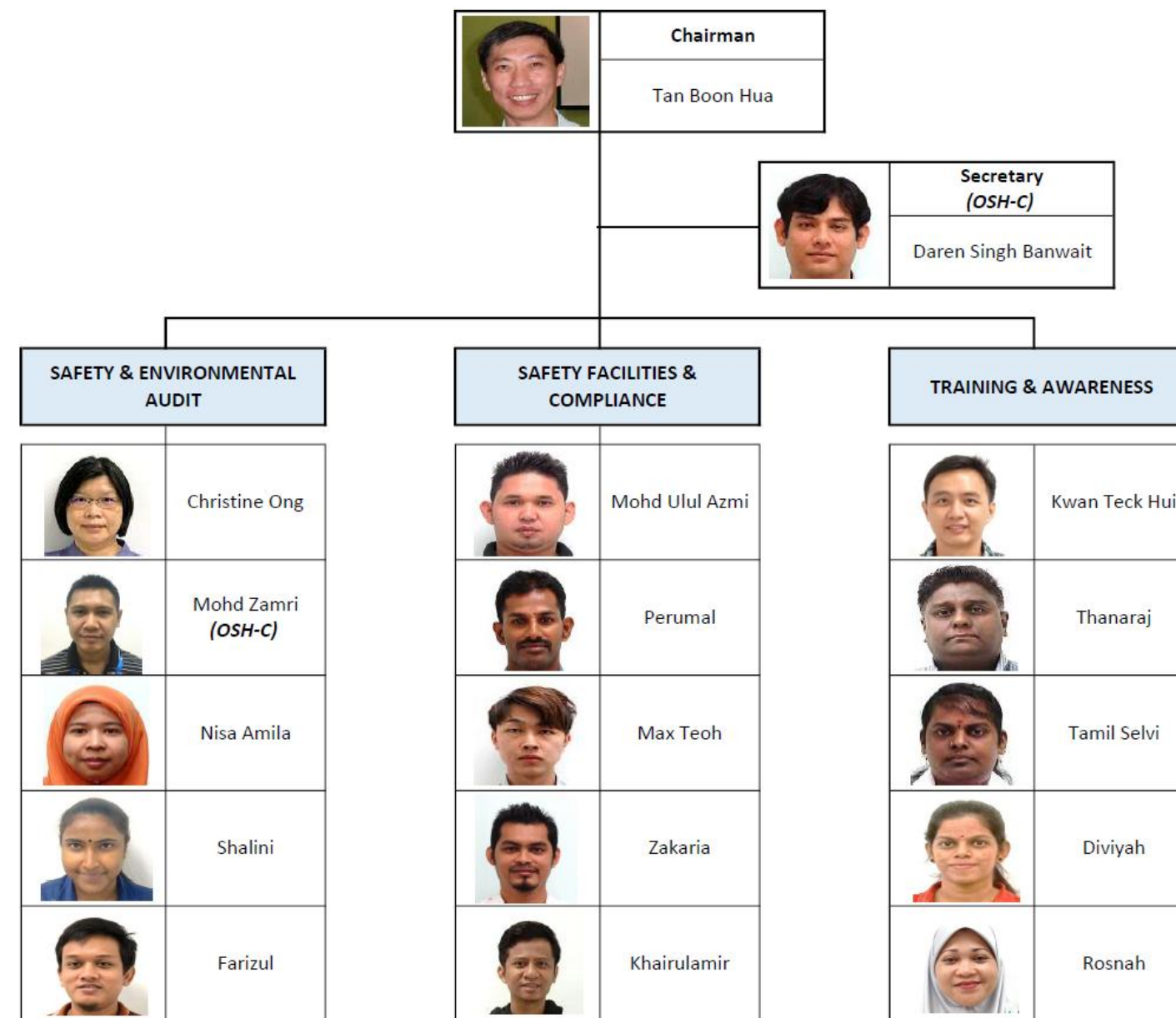


How can we minimise the risks?



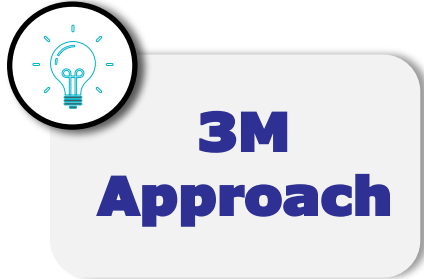
Safety, Health & Environment Committee

1
Man



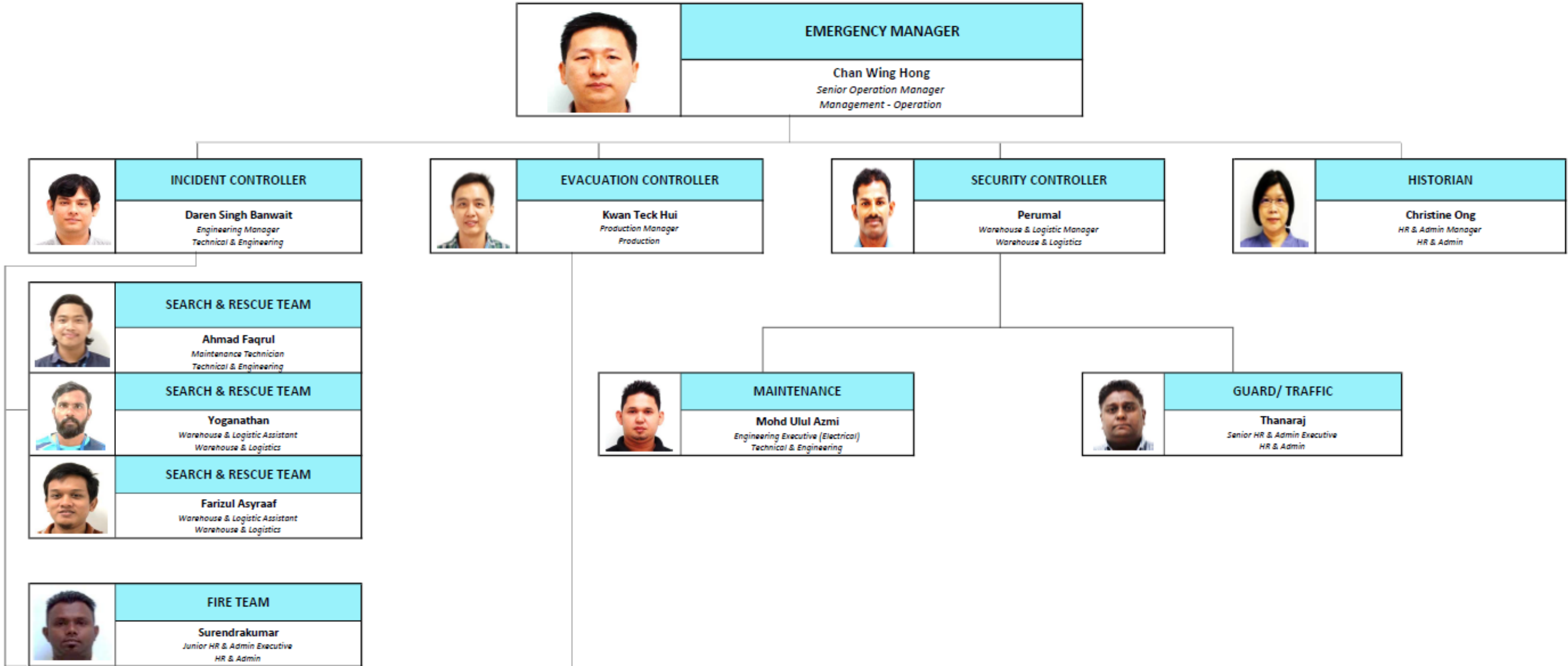
2

How can we minimise the risks?



Emergency Response Team

1
Man



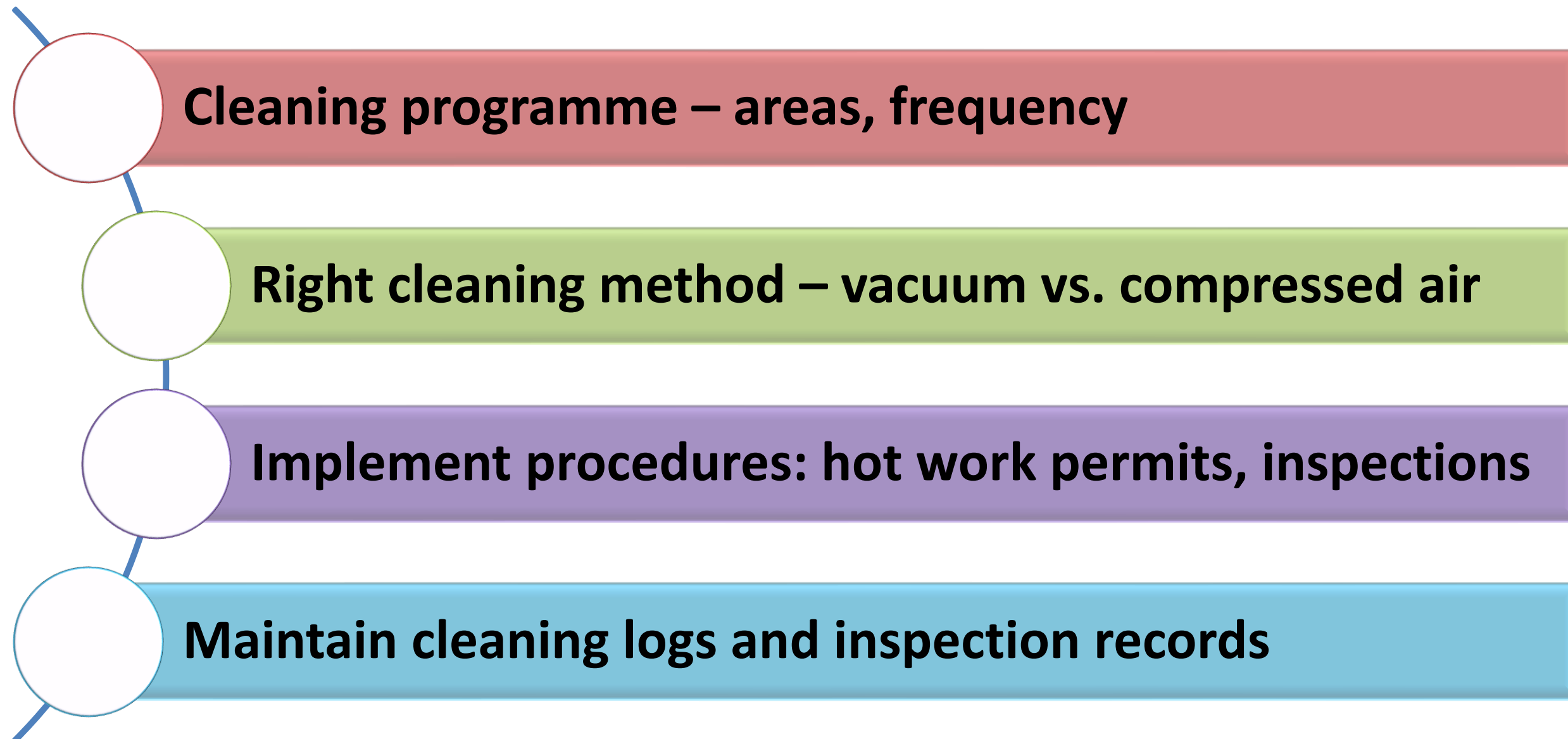
2

How can we minimise the risks?



3M
Approach


2 **Method**





Cross-Functional Checks: Monthly Safety & Environment Audit



2 Method


 Empire Manufacturing Sdn Bhd Safety & Environmental Audit Checklist		
Area Inspected: Warehouse FG		Date: 27 May 2025
Auditors: Shireen & <u>Khairulmir</u>		
1.0	HOUSEKEEPING	Yes/No
1.1	Is the overall condition of room / area tidy with surplus items stored away safely?	No Refer to 7.1
1.2	Are heavy items stored at an appropriate height for ease of manual handling?	Yes
1.3	Are passageways, especially emergency exits, kept free of obstruction?	No Refer to 7.1
1.4	Are floor coverings damaged or worn so as to be a tripping hazard?	Yes
1.5	Does the cabinet / racking have excessive item on top which can result to the possibility of falling?	No Refer to 7.2
2.0	ELECTRICAL SAFETY	Yes/No



Cross-Functional Checks: Weekly Management Walkabout

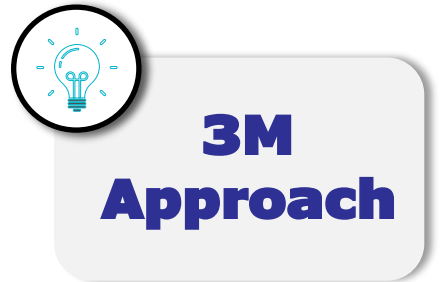
2 Method

7.1		Clean up floor once the line completed running	Production
		Pls request engineering to repair and touch up the floor. Pls refer to Ms Rosnah for contact details	Production

7.6		To place ERT contact list in case any emergency case. Should place exit evacuation plan on every notice board.	Packing / Production	Open
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2

How can we minimise the risks?



Production Cleaning Checklist & Cleaning Logs

2 Method

EMPIRE MANUFACTURING SDN BHD
PRODUCTION CLEANING & SANITATION CHECKLIST

Week/ Month: 29
<A> Production - Mixing Hall

Items	Method	Frequency	Mon	Tue	Wed	Thu	Fri
			Date: <u>14/7</u>	Date: <u>15/7</u>	Date: <u>16/7</u>	Date: <u>17/7</u>	Date: <u>18/7</u>
1. Silo Tank 2. Mixer 3. Storage Tank/ Transfer Tank 4. Screw Feeder Conveyor/ Connecting Chute/ Rubber hose/Silicon Sleeve. 5. Interior room of wall and floor.	<p><u>Flavor product/ Allergen product</u> Cleaning: 1. Remove any product stain on internal machine part. 2. Clean with a clean microfiber cloth / mop by using dilution food grade detergent which pour 100ml / 250ml of food grade detergent into 5000ml water and mixed it. *250ml dilution is for Line 12 and Line 15 3. Dry it by using air spray gun.</p> <p>Sanitizing: 1. Spray surface with sanitizer, ensuring that entire surface is covered 2. Allow to air dry, about 1 -2 min.</p> <p><u>Non-Flavor product</u> Cleaning: 1. Vacuum and air spray with airgun 2. Wipe with a clean microfibre cloth / mop</p> <p>Sanitizing: 1. Spray surface with sanitizer, ensuring that entire surface is covered 2. Allow to air dry, about 1 -2 min.</p>	Every product change over	/	/	/	/	/
Cleanliness & Sanitation (✓ or X)							



How can we minimise the risks?



Production Cleaning Checklist & Cleaning Logs

2 Method

<C> Production - Debag Area					
Items	Method	Frequency	Mon	Tue	Wed
			Date: 14/7	Date: 15/7	Date: 16/7
Floor	Cleaning: 1. Vacuum the floor 2. Clean the floor by using food grade detergent	Daily	/	/	/
Wall, Window, Piping, Wiring cover, Beam, Door	Cleaning: Wipe by using wet clean cloth	Weekly	/		
Ceiling	Vacuum/ wipe with wet clean	Once every three months			
Staging area (Bay 5 & 6)	Mopping	Daily	/	/	/
Pallet/ Basket	Wash with water/ Scrubbing / Wipe with wet clean cloth	Weekly	/		
Platform / Fencing	Mopping and wipe with wet clean cloth	Daily	/	/	/
Ingredient scope/ Transfer Tank	<u>Cleaning:</u> 1. Rinse with clean water. <u>Sanitizing:</u> 1. Spray surface with sanitizer ensuring that entire surface is covered 2. Allow to air dry, about 1 -2 min.	Daily / Before use	/	/	/
External Weighing scale, Ingredient Racking	Wipe with wet clean cloth	Daily	/	/	/
Washing bay	Wash with water & food grade detergent , scrubbing & mopping	Daily	/	/	/
Production Loose Item such as Table, Chair/ Hand pallet Truck	Wipe with wet clean cloth	Weekly	/		

2

How can we minimise the risks?



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Approach

Scheduled Cleaning with the Right Tools

2

Method




How can we minimise the risks?



Hot Work Permit

2 Method

Food Empire		WORK PERMIT			
 Food Empire EMPIRE MANUFACTURING SDN BHD (953863-W) <small>(A member of Food Empire Holdings Limited)</small> Lot No. 1723, Batu 9 1/2, Jalan Kapar, 42200 Klang, Selangor D.E., Malaysia.		SHE-F-101 Rev.0			
For each work, a new Work Permit(WP) form has to be processed and submitted. The conditions of issue of a WP must be complied with throughout the duration of work, otherwise, this WP can be withdrawn at anytime. Each work permit only can last for 24 hours. This permit must be displayed prominently at the area where the work is getting carried out.					
Application (To Be Completed By Applicant)					
Work Performed by (Company name):					
Name of Applicant:				Contact No :	
Location of Work:					
Date of Work:		Time of Work (From) :		To:	
Type of work					
General	Description of work scope :				
	PPE provided :				
	Verify / monitor by :		supervisor / competent person		
	Area of work :		corner off / with signage		
	Equipment using electrical power :				
	Others equipments use :				
Remarks :					
Hot work	Description of work scope :				
	PPE provided :				
	Verify / monitor by :		supervisor / competent person		
	Area of work :		corner off / with signage		
	Equipment using electrical power :				
	Others equipments use :				
Remarks :					
Description of work scope :					
PPE provided :					

2

How can we minimise the risks?



HIRARC

2 Method

HIRARC REGISTER FORM											
Company		EMSB			Conducted by : (Names, Designations)			Zamri (Engineer), Logan (Senior Technician)		Rev No.	
Process/Location		Repairing work (contractor) / production			Last Review Date:			3/5/2023	Next Review Date: June 2026		
Approved by: (Name, Designation)		Mr Chan Wing Hong, Senior Operation Manager									
No.	Work Activity	1. Hazard Identification		Current Risk Control	2. Risk Evaluation			Relate to legal	3. Risk Control		
		Hazards	Effect		Likelihood (Probability)	Severity	Risk Level		Control measures	PIC	Due date / status
1	Cutting / grinding	Environment, noisy	causing ear impairment	wearing earplug	3	2	6 (M)		Maintain current practice		
		Physical: Flying metalchip during work	physical injury to eye	wearing safety goggles/faceshield	3	2	6 (M)		Maintain current practice		
		mis-handling tools	physical injury to hand or other bodypart	wearing latex glove, give training	3	4	12 (M)		propose using cut resistance glove	T&E	
		exposure to fumes	asthma, lung related disease	wear medical mask	3	3	9 (M)		Maintain current practice		
2	Welding	exposure to fumes	asthma, lung related disease	wear medical mask	3	3	9 (M)		Maintain current practice		
		fire spark and hot object	burn skin / eye irritation / skin redness	wearing faceshield, welding gloves	3	3	9 (M)		propose prepare leather handcover	T&E	
		chemical welding flux	eye irritation, skin irritation	wearing faceshield, welding gloves	2	2	4 (L)		Maintain current practice		
		bright welding light	eye irritation	wearing faceshield	3	2	6 (M)		Maintain current practice		
3	Drilling	Environment, noisy	causing ear impairment	wearing earplug	3	2	6 (M)		Maintain current practice		
		Physical: Flying metalchip during work	eye injury	wearing safety goggles/faceshield	3	3	9 (M)		Maintain current practice		
		mis-handling tools	physical injury to hand or other bodypart	wearing latex glove, give training	3	4	12 (M)		propose using cut resistance glove	T&E	
		exposure to fumes	asthma, lung related disease	wear medical mask	3	3	9 (M)		Maintain current practice		
4	Dismantle and install parts	heavy lifting / work	backpain, body ache	using trolley, using chain block	3	2	6 (M)		Maintain current practice		
		metal chip during hammering	eye injury, body part injury	using glove, using goggle	3	3	9 (M)		Maintain current practice		



2

How can we minimise the risks?



**3M
Approach**

3

Machine

(Engineering Design)

- Install dust collection systems
- Explosion vents and suppression systems
- Explosion-proof vacuums, avoid compressed air
- Minimise flat surfaces and dust collection points
- Seal equipment where possible

2

How can we minimise the risks?



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Approach

Proper Dust Collector to Minimise Dust Accumulation

3

Machine
(Engineering Design)



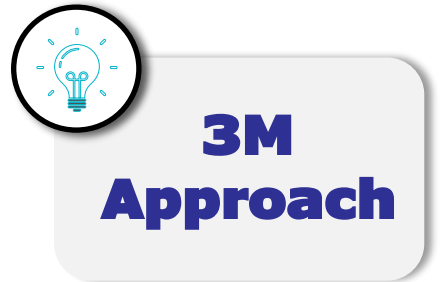
Dust Collector



Explosion Vent

2

How can we minimise the risks?



Dust Collector Cleaning Schedule

3 Machine (Engineering Design)

EMPIRE MANUFACTURING SDN. BHD.

EN-F-109 (e) Rev:0

DUST COLLECTORS CLEANING SCHEDULE

Updated date: 2nd January 2025
Updated by: Halizan

Year: 2025

Locations	Month (week)	Schdule	MONTH																								Remarks	
			Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec			
			DATE	SIGN	DATE	SIGN	DATE	SIGN	DATE	SIGN	DATE	SIGN	DATE	SIGN	DATE	SIGN	DATE	SIGN	DATE	SIGN	DATE	SIGN	DATE	SIGN	DATE	SIGN		
DUST COLLECTOR																												
Line 1																												
EXHAUST FILTER (TOP) CHANGE	Actual Date		18	X	15	X	25	X	19	X	17	X	23	X														monthly
FILTER CARTRIDGE CLEANING / WASH	Actual Date		18	X	15	X	25	X	19	X	17	X																monthly
FILTER CARTRIDGE CHANGE	Sch. Plan																										2 years change new filter	
	Actual Date											23	X															
Line 2																												
EXHAUST FILTER (TOP) CHANGE	Actual Date		18	X	15	X	25	X	19	X	17	X	23	X														monthly
FILTER CARTRIDGE CLEANING / WASH	Actual Date		18	X	15	X	25	X	19	X	17	X	23	X														monthly
FILTER CARTRIDGE CHANGE	Sch. Plan																										2 years change new filter	
	Actual Date																											
Line 3A																												
FLAT BAG FILTER CLEANING / WASH	Actual Date		25	X	22	X	25	X	19	X	24	X	24	X														monthly
FLAT BAG FILTER CHANGE	Sch. Plan																										2 years change new filter	



2

How can we minimise the risks?

Concerned about costs?



2

How can we minimise the risks?

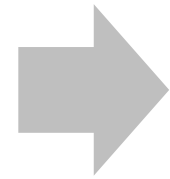
Low-cost Best Practices for SMEs



Label dust-prone areas clearly



Establish cleaning programmes



Schedule routine training and inspections



Create an internal safety team

2

How can we minimise the risks?

Takeaways



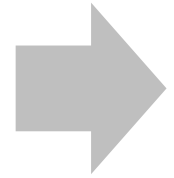
Combustible dust is a hidden but serious hazard



Key actions: awareness, housekeeping, controls



Start small, improve continuously



Seek expert help if needed



foodempire.com

Thank You

