

Workplace Safety and Health Guidelines

Workplace Housekeeping



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1. Introduction

Housekeeping is relevant in all workplaces—whether at the office, factory, shipyard, construction site, storage facility, hospital, laboratory, retail shop or industrial kitchen.

Effective housekeeping can eliminate many workplace hazards and help get work done safely and properly. A clean and tidy workplace also enhances a company's image and provides immediate visible evidence of its commitment towards workplace safety and health (WSH).

Housekeeping is not just about the cleanliness of a workplace. It is also about keeping workplaces in order. Workplace housekeeping may be defined as activities undertaken to create or maintain an orderly, clean, tidy, and safe working environment.

Good housekeeping entails the effective organisation of the workplace and it contributes to better WSH performance, increased productivity and better quality control. It also includes good workplace traffic management, proper storage of raw materials and finished goods, neat and tidy work areas as well as adequate workplace illumination (see Chapter 3 for a listing of various housekeeping aspects). With good housekeeping practices, workplaces can be kept safe from potentially dangerous objects or substances present in the work environment. An organised and clutter-free work area also makes it easier to respond to or evacuate in the event of an emergency.

Good housekeeping can result in:

- more effective use of space;
- better inventory control of tools and materials;
- reduced handling to ease the flow of materials;
- more efficient equipment clean-up and maintenance;
- reduced equipment and property damage through better preventive maintenance;
- more hygienic workplace conditions that would lead to improved workers' health;
- improved overall look and feel of work environment; and
- improved staff morale and wellbeing.

Poor housekeeping, on the contrary, creates workplace hazards that can lead to various accident types like Slips, Trips and Falls (STF), Caught In-between Objects (CIBO), Struck by Falling Objects (SBFO), Struck by Moving Objects (SBMO), Cut/ Stabbed by Objects (CSBO) and Struck against Objects (SAO). Additionally, poor housekeeping may create fire hazards that inevitably lead to increased fire risk.

Examples of workplace accidents caused by poor housekeeping:

- slipping on a spilled substance or oily, wet or dirty surfaces;
- tripping over loose objects on floors, stairs and platforms;
- striking against protruding, improperly stacked or misplaced items;
- being hit by objects falling from a high shelf or the top of a cupboard; and
- being cut or punctured by a protruding nail or sharp object.

Over and above being a useful tool for productivity and quality management, companies in Singapore are also increasingly recognising housekeeping as an important way to reduce workplace accidents and injuries.

This guide introduces the 5S concept of housekeeping and how it can be used to enhance WSH and improve workplace efficiency and productivity at the same time. Good housekeeping initiatives support WSH culture-building efforts and can be used to enhance the “Ownership and Teamwork” attribute of the WSH CultureSAFE Model.

1.1 Good Housekeeping Basics

There are three key factors to good housekeeping. They are:

1. Overall cleanliness and orderliness

No matter the level of occupancy, a company can improve the conduciveness, hygiene and safety of its work environment by keeping all its work areas clean, organised and uncluttered. This can be achieved through regular housekeeping, timely disposal or removal of items that are seldom used or no longer needed.

2. Adequate space and proper layout

Work activity requires space and the presence of people, equipment and materials tend to obstruct orderly movement throughout the premises. A careful review of space requirements based on actual operations may suggest ways for a better layout. A well-designed work space with equipment arranged for optimum workflow will improve efficiency and productivity, as well as the ease with which work activities can be carried out.

3. Correct storage and materials handling

Proper storage and handling equipment (e.g., engineered shelving, forklifts, handling robots, and conveyor systems) are necessary to facilitate the movement and placement of materials in a factory, construction site or storage facility. This will prevent haphazard storage which can lead to blocked exit paths and/ or obstructed access to fire control equipment (e.g., fire extinguishers, fire hose reels). Poorly organised storage may also result in the accumulation of unwanted items, debris and/ or waste materials especially in any available vacant space.

Good housekeeping will ensue once all the above factors are addressed. A neat and tidy workplace can be achieved and sustained when a routine is established for each factor.

1.2 Responsibility for Housekeeping

Good housekeeping is everyone’s responsibility. Keeping a workplace safe, clean and clutter-free is an ongoing activity in which all employees have to do their part (see Table 1).

Housekeeping Responsibilities	
1. Prevent slips, trips and falls.	<ul style="list-style-type: none"> • Do not stack items along walkways or passageways; • Put away electrical cords and water or air hoses; and • Put away tools and keep drawers closed.
2. Limit spills.	<ul style="list-style-type: none"> • Clean up spills immediately; • Repair leaks as soon as possible; and • Sweep up debris.
3. Ensure machine safety.	<ul style="list-style-type: none"> • Inspect machines and ensure that all guards are in place before use; • Keep area around machines clear; • Put away tools; and • Clean machines regularly.
4. Prevent fires.	<ul style="list-style-type: none"> • Store flammable or combustible liquids in labelled and closed containers; • Keep flammable or combustible materials away from sources of ignition; • Keep electrical equipment clean; and • Inspect electrical cords before use.
5. Ensure exits and access routes to fire equipment are clear.	<ul style="list-style-type: none"> • Do not block emergency exits; • Keep evacuation routes clear; • Check that fire extinguishers are accessible; and • Ensure that electrical panels can be opened.

Table 1: Examples of housekeeping responsibilities.

Housekeeping may require expert knowledge and a good understanding of the workflow and activities to be carried out. As an example, consider an operating theatre where surgery is to be performed. While the theatre support staff and operating room technicians can help to prepare and tidy up the operating theatre, it is the surgeon and operating room nurses who decide the tools and equipment required and how these should be arranged for a successful operation.

From the above example, it can be seen that active participation from various teams of employees is required for housekeeping to be effective. Companies will need to provide the necessary resources (e.g., time and supporting infrastructure) and develop a disciplined and systematic approach to housekeeping so that employees will be able to carry out their housekeeping duties as part of daily routine.

1.3 Outdoor Housekeeping

Good housekeeping is important outdoors as it is indoors (i.e., inside a building or home). Good housekeeping not only reduces workplace accidents and injuries; it is also a critical aspect of fire safety.

Outdoor storage areas should be located at sufficient separation distances from buildings and other combustible storage to prevent fire spread. This is because the accumulation of stored items (including waste) can present a fire load sufficient to cause damage to buildings as well as outdoor facilities and equipment. Housekeeping focuses on maintaining the separation by prohibiting even the temporary introduction of structures or objects such as shelters, discarded crates, or other combustibles.

If materials and equipment are stored outdoors, good housekeeping requires that combustibles and obstructions are kept out of the passageways between storage piles. Keeping passageways clear will allow easy access for firefighting in the event one breaks out.

Proper housekeeping also requires the prohibition of smoking in areas used for outdoor storage of flammable materials. Companies should provide suitable warning signs and non-combustible receptacles for smokers to dispose smoking materials before entering a "No Smoking" zone.

The regular inspection of work premises and subsequent correction of irregularities are part of good housekeeping. Irregularities may refer to situations that are not right (e.g., a blocked passageway) or things that are out of place (e.g., a misplaced tool).

For more information on housekeeping and outdoor storage, see

- Fire Safety (Petroleum and Flammable Materials) Regulations;
- Fire Safety Guidelines for Open Plant Structures in Oil, Chemical and Process Industries
- Singapore Civil Defence Force Fire Code 2013;
- SS 532: 2007 Code of Practice for the Storage of Flammable Liquids;
- SS 586–1: 2014 Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods – Part 1 : Transport and Storage of Dangerous Goods; and
- *WSH Guidelines on Flammable Materials*.

1.4 Relevant WSH Legislation

Applicable legislation associated with housekeeping:

1. The WSH Act states that it is the duty of the occupier of the workplace to take, as far as it is reasonably practicable, measures to ensure that (i) the workplace, (ii) all means of access to or egress from the workplace, and (iii) any machine, equipment, plant, article or substance kept on the workplace are safe and do not cause health risk to any person within those premises, whether or not the person is at work or is an employee of the occupier.
2. The WSH (Risk Management) Regulations requires the employer, self-employed person and principal to take all reasonably practicable steps to eliminate or minimise any foreseeable risk to any person who may be affected by his or her undertaking in the workplace.
3. The WSH (General Provisions) Regulations require all goods, articles and substances which are stored, stacked or placed in a workplace to be stored, stacked or placed in a manner that does not interfere with (i) the adequate distribution of natural or artificial light, (ii) the proper operation of any machine or equipment, (iii) the unobstructed use of passageways or traffic lanes, and (iv) the efficient functioning of sprinkler systems or the use of other fire-fighting equipment.
4. The WSH (Construction) Regulations 2007 stipulates the following:
 - (i) **Storage and placement of materials and equipment**
It is the duty of the employer or principal to ensure that material or equipment is not stored, stacked or placed so close to any opening or edge of a floor, scaffold, platform or structure to endanger persons below the opening or edge.
 - (ii) **Protection against falling objects**
It is the duty of the occupier to ensure that adequate overhead protection is provided at the worksite against objects that could fall on or otherwise hit persons.
 - (iii) **Slipping hazards**
It is the duty of the employer or principal to ensure that the passageway, scaffold, platform or other elevated working surface to be used by workers is kept free from slipping hazards.
 - (iv) **Hazards arising from protruding objects**
It is the duty of the occupier to ensure that:
 - a. All passageways, stairs, platforms and other means of access or places of work in the worksite are kept free from debris or protruding objects or any other obstruction that could cause tripping; and
 - b. Any sharp projection present in any passageway, stair, platform and other means of access or place of work in the worksite that may injure any person is removed or otherwise made safe.
 - (v) **Accumulation of debris**
It is the duty of the occupier to ensure that debris shall not be allowed to accumulate so as to constitute a hazard in the worksite.

5. The WSH (Shipbuilding and Ship-repairing) Regulations 2008 stipulates the following:
- (i) **Slipping hazards**
Where any work is carried out by any person in a shipyard or on board a ship in a harbour, it is the duty of the responsible person to ensure that any passageway, scaffold, platform or other elevated working surface to be used by workers is kept free from slipping hazard.
 - (ii) **Hazards arising from protruding objects**
Where any work is carried out in a shipyard or on board a ship in a harbour, it is the duty of the responsible person to ensure that:
 - a. All passageways, stairs, platforms and other means of access or places of work are kept free from debris or protruding objects or any other obstructions that could cause tripping; and
 - b. Any sharp projection that is present in any passageway, stair, platform and other means of access or place of work which may injure any person is removed or otherwise made safe.
 - (iii) **Disposal of debris**
Where any work is carried out in a shipyard or on board a ship in a harbour, it is the duty of the responsible person to ensure that no debris is allowed to accumulate so as to constitute a hazard.

2. 5S Concept and Housekeeping

Many associate the concept of 5S with housekeeping. In actuality, while a 5S programme can be used to achieve good housekeeping, it can be used for much more. 5S is essentially a workplace organisation method used to achieve productivity, quality and WSH improvement in any type of business. This chapter briefly introduces the concept of 5S and how companies can implement a 5S programme.

2.1 What is 5S?

5S is a workplace organisation method based on a Japanese quality management concept companies may use to achieve a clean and organised workplace. Through a systematic approach, 5S offers opportunities for continual improvement and enhanced workplace efficiency and effectiveness.

5S is an acronym for five words beginning with the letter “S” (see Table 2).

5S Element	
5S-1	Sort
5S-2	Straighten (set in order)
5S-3	Shine
5S-4	Standardise
5S-5	Sustain

Table 2: Elements of 5S.

Each word represents an action to be taken in a recommended sequence (see Figure 1).



Figure 1: Recommended sequence for 5S implementation.

2.2 Why Practice 5S?

The objective of practising 5S is to enhance operational control of processes, reduce operational downtime, prevent accidents, and foster a proactive and participative workplace culture.

A 5S programme focuses on:

- organisation;
- creating visual order;
- cleanliness; and
- standardisation.

Benefits of implementing a 5S programme include:

- Workplace becomes clean and better organised;
- Operations become more efficient and productive;
- Product and/ or service quality improves with fewer rejects or complaints;
- Results are visible to everyone (visitors included);
- Employees become more aware of the importance of housekeeping and personal discipline;
- Employees achieve a greater sense of pride in their work and workplace, and take on higher ownership of their work responsibilities;
- Workplace becomes safer; and
- Company image is enhanced resulting in more business opportunities.

2.3 Management's Role in 5S Implementation

Management plays a critical role in ensuring the successful implementation of a 5S programme.

Proposed activities for driving the 5S implementation include:

1. Communicating top management's commitment

Companies need to identify areas top management can communicate its commitment to 5S. Possible ways include:

- Publicising management philosophy of 5S to all staff (e.g., through a speech or memo);
- Organising awareness talks on 5S and holding staff meetings on 5S;
- Providing 5S training to all employees;
- Allocating official time for daily or weekly 5S activities;
- Sharing key business challenges with frontline management and highlighting how 5S may be applied as a solution to these challenges; and
- Conducting regular management walkabouts.

2. Setting up a 5S steering committee

A 5S steering committee may be set up to oversee and drive the implementation of a 5S programme company-wide. Responsibilities charged to the committee include setting 5S goals and targets, creating a 5S operational structure (e.g., comprising a main committee and any supporting sub-committees), planning and implementing the 5S programme, and promoting 5S company-wide. To set the pace and provide overall direction for the programme, at least one top management representative should be included in the steering committee.

3. Developing a 5S implementation plan

The steering committee may map out an implementation plan to determine the line-up of 5S activities and resources required to carry them out. See Table 3 for a list of suggested activities that can be included into a 5S programme.

	5S Activity	Month												
		1	2	3	4	5	6	7	8	9	10	11	12	
1	Top management announcement.	■												
2	Set up 5S steering committee.	■												
3	5S promotion (talks, banners, etc).		■											
4	5S basic training.		■	■										
5	5S launch ceremony.			■	■									
6	5S poster competition.			■	■	■								
7	Inter-department 5S competition.				■	■	■							
8	5S department evaluation.						■							
9	5S advanced training.							■						
10	Visits to other 5S companies.							■	■	■				
11	5S projects.								■	■	■			
12	5S programme review.											■	■	

Table 3: Example of a 5S implementation plan.

After the plan is developed and finalised, this is followed by actual on-site 5S implementation (see Section 2.4) and management review on the programme's effectiveness.

See Annex A for a simplified flowchart summarising the key steps to 5S implementation.

2.4 Implementing 5S

The following sections provide ideas on what can be done for each 5S implementation step.

2.4.1 5S-1 Sort

Action required: Separate unnecessary from necessary items and remove unnecessary items.

Sorting is about knowing what to keep and what to remove or discard. This includes machines, equipment, furniture and inventory. By removing unnecessary items, valuable industrial or commercial space can be put for better use, paving the way for 5S-2 Straighten.

Step 1: Discard items that are clearly no longer necessary or of use

Examples of unnecessary items at the workplace include irrelevant or obsolete objects, expired or excess inventory, outdated signs and documents, defective equipment, broken tools, and so on.

Likely places to look for unnecessary items include:

- rooms or areas not designated for a particular purpose;
- storage shelves, cupboards, drawers and spaces under desks;
- along indoor passageways;
- space behind pillars, next to partitions and under the stairs;
- in corners next to entrances and exits; and
- along outdoor pathways and fences.

See Figure 2 for guidance on what to do with unnecessary items identified.

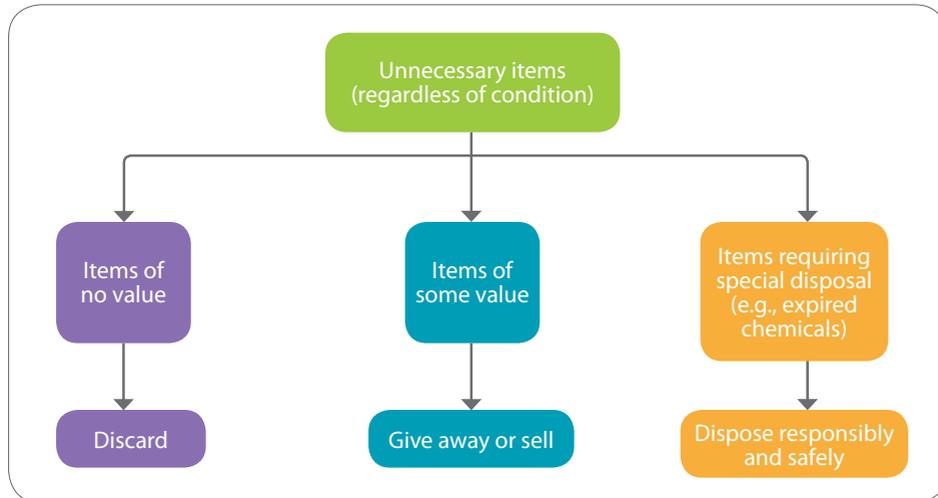


Figure 2: Guide to handling unnecessary items.

Step 2: Evaluate items that are potentially unnecessary

These are usable workplace items that are in good or working condition; they are, however, not in use for an extended period. Such items should not be discarded till their continued usefulness is evaluated.

The Red Tag Strategy is a simple method for identifying potentially unnecessary items. It reminds workers to evaluate the continued usefulness of the items so that they can decide on the appropriate course of action (i.e., keep or discard). Red tagging refers to the placement of red-coloured tags on workplace items to be evaluated. Red is typically used as the colour stands out and will catch people's attention. See Figure 3 for an example of a red tag.

A red tag (essentially a disposal notice) asks the following:

- Is the item necessary?
- If it is necessary, is it needed in this quantity?
- If it is necessary, does it need to be located here?

DISPOSAL NOTICE

Name of Inspector: _____
 Department: _____
 Description of item: _____
 Location: _____
 Date posted: _____
 Reply by: _____

OWNER'S REPLY

Item status: _____
 Quantity needed: 0 / 1 / 2 / 3 / 4 / 5 / _____
 Recommendation: Discard / Retain
 Return to original location: N / Y
 Justification: _____
 Name of Owner: _____
 Department: _____
 Date of reply: _____

Figure 3: Example of a red tag.

Once the item is tagged, it may be shifted to a designated red tag holding area for a specified period of time for evaluation by its owner(s). A red-tag holding area is a physical area set aside for storing red-tagged items that need further evaluation. It serves as a safety net between questioning the need for the item and actually discarding it.

Upon receiving the owner's recommendation, the item may be discarded, relocated or returned to its original location.

2.4.2 5S-2 Straighten (Set in Order)

Action required: Organise for better workflow and store necessary items for easy retrieval.

Straighten refers to organising and labelling necessary items (e.g., tools, equipment and materials) so that they can be easily found, retrieved or returned to its original location. 5S-2 Straighten (set in order) is a prerequisite to implementing 5S-4 Standardise.

Step 1: Arrange necessary items for better workflow

Items that are necessary need to be stored at appropriate locations for greater workplace efficiency, safety and optimum space usage.

i. Optimal Storage

Proper and neat storage will eliminate or significantly reduce the time taken to look for things. Use Table 4 as a general guide to decide where an item should be stored.

Frequency of Use	Storage Location
Every day	Store at work location for fast retrieval and return.
Every week	Store near work location.
Once every 1 to 3 months	Store in a central location within work area.
Once every 6 months	Store in a central storage facility away from work area.
Not used in the past year	Consider discarding.

Table 4: Recommended storage location based on frequency of use.

For small objects (e.g., tools), improve efficiency by storing items used together and in the sequence they are used (see Figure 4).

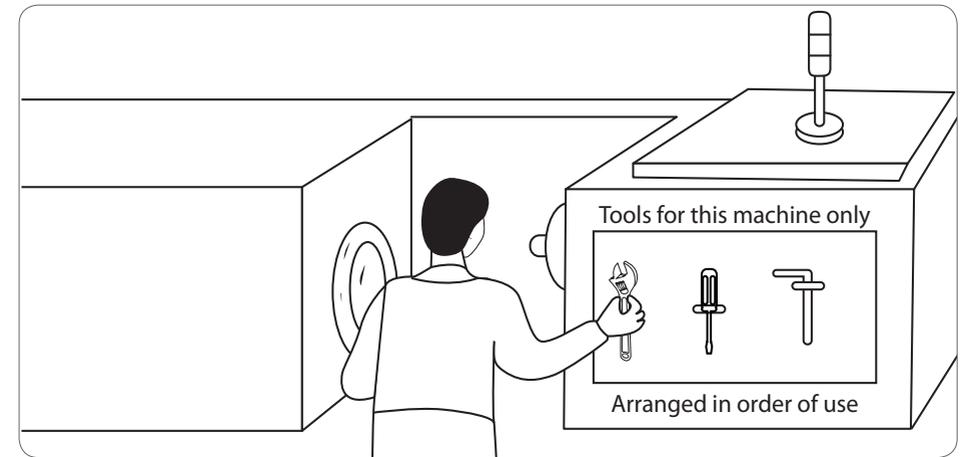


Figure 4: Tools kept close to the location of work and stored in the order of use.

For heavy objects (e.g., equipment), detailed information on safe storage systems (including use of engineered racking systems and automated storage and retrieval systems) can be found in UK Health and Safety Executive's (HSE) guide, *Warehousing and Storage: A Guide to Health and Safety*.

ii. Optimal Layout

A 5S Map is a floor plan or area diagram of the work space under review that may be used to evaluate current locations of items (e.g., equipment and machines). Companies may use a 5S Map to determine possible rearrangements to improve WSH and operational efficiency. It may be applied to small or large work areas, for example, a single workstation, the entire shop floor, production line, office or department.

See Figure 5 for example of how a 5S Map may be used to facilitate a layout rearrangement for better workflow.

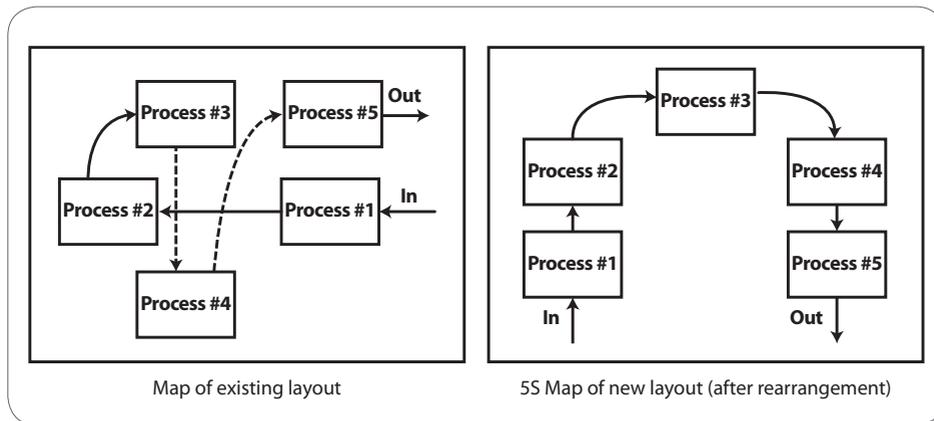


Figure 5: Example of how a 5S Map is used to facilitate a layout rearrangement for better workflow.

The key WSH and fire safety considerations when planning a factory layout can be found in SS 567: 2011 Code of Practice for Factory Layout – Safety, Health and Welfare Considerations. Specific guidance on the layout of plant and machines is given in SS 537–1: 2008 Code of Practice for the Safe Use of Machinery – Part 1: General Requirements.

In particular, when determining the space requirement between plant and machine, it is important that sufficient space is provided for:

- a machine’s interaction with other machines;
- safe travel of moving parts or materials (so that they do not cause injury and property damage);
- storage of tools at the point of use;
- safe access and egress of machine operator;
- on-site cleaning and maintenance activities; and
- fire evacuation.

Additionally, space must also be provided to allow clear separation from passing traffic (e.g., pedestrian traffic and movement of mechanical handling equipment such as forklifts and travelling cranes).

Step 2: Create visual order

Another important aspect of 5S-2 Straighten is the implementation of a visual control management system. Vision controls refer to any means used to:

- Provide visual instructional guidance on how a task should be carried out;
- Display operating or progress status in an easy-to-see format; and
- Make the abnormality or deviation from the desired standard easy to identify.

For example, visual controls may be used to indicate where items belong, the number of items belonging to a particular location, the procedure for carrying out work, and so on. See Table 5 for examples of visual control strategies.

Visual Control Strategy	Example
<p>Labelling</p>	 <p>Storage shelf labelling to facilitate quick retrieval and return.</p>
<p>Outlining</p>	 <p>Outlines of tools indicate exactly where each tool is kept, the total number of tools, and which tools are in use or missing.</p>

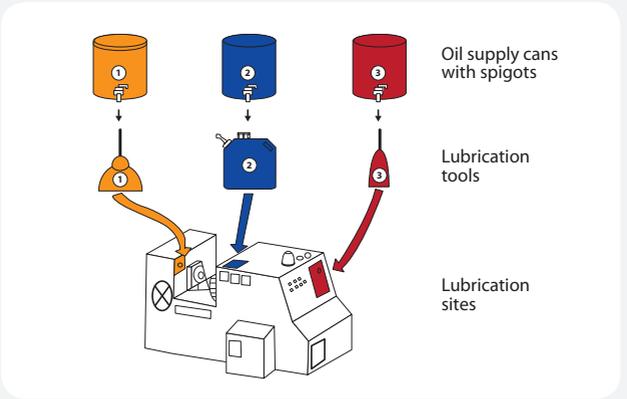
<p>Colour coding</p>	 <p>Colours are used to ensure that the correct lubricant goes to the correct lubrication site.</p>
<p>Marking</p>	 <p>Floor markings (painted or taped on) to separate process or storage areas from aisles meant for human or vehicular traffic.</p>

Table 5: Examples of visual control strategies.

With everything properly organised and in their designated locations, work processes will become more efficient and workplaces will become safer as many common hazards (e.g., due to misplaced items and tools, haphazard storage and cluttered walkways) would have been eliminated as a result of implementing 5S-2 Straighten.

2.4.3 5S-3 Shine

Action required: Keep workplace clean, tidy and in good condition.

The concept of 5S-3 Shine covers both cleaning and inspection. Cleaning and inspection go hand in hand as an inspection is always carried out before cleaning an area or a machine. Emphasis is on removal of dirt and grime from the workplace. This practice will result in an enhanced company image as well as improved safety, health and well-being of employees. A clean workplace makes for a pleasant working environment. Machines and equipment, if kept clean and in good working condition, will lead to fewer breakdowns, lower operational downtime and fewer late deliveries to customers; these are prerequisites for the production of quality goods and services.

With the implementation of 5S-3 Shine, cleaning should become an ingrained part of daily work habits, so that tools, machines and work areas are ready for use.

Step 1: Determine target areas for cleaning or inspection

Workplace target areas may include the following:

- Workspace: Floors, walls, walkways, pillars, ceilings, windows, shelves, rooms, lights, and so on.
- Equipment: Machines, tools, instruments, tables, chairs, cabinets, and so on.
- Warehouse or storeroom: Raw materials, parts, intermediate and finished products, and so on.

Step 2: Assign cleaning or inspection duties

Cleanliness is the responsibility of every employee at the workplace.

First, divide the workplace into work zones, and then assign cleaning or inspection duties to an individual or a team of employees working in each zone.

Suggested tools:

- **5S Assignment Map**
A visual way of communicating duties is to mark them on a 5S Map (see Step 1 of 5S-2 Straighten). The 5S Assignment Map will provide an overview of all the work zones at a specific workplace and indicate the person(s) responsible for it
- **5S Schedule**
For more complex situations (e.g., shift work), a 5S schedule may be used to list (in table format) the day, time and person(s) responsible for each work zone.

Step 3: Establish the cleaning or inspection method

Daily 5S-3 Shine activities should include cleaning or inspection before work starts, during work and after work is done. Provide sufficient time for cleaning or inspection duties so that these activities become a natural part of everyone's daily routine.

The cleaning or inspection method should include information on the cleaning tools (i.e., the supplies and equipment used), and cleaning standards (i.e., the procedure to follow and level of cleanliness to be achieved).

Step 4: Carry out the cleaning or inspection

A daily, weekly or monthly checklist may be used to guide the responsible person(s) on the target areas for cleaning or inspection. See Table 6 for a sample checklist.

Item for Cleaning or Inspection		Action (If "No")			
		Clean	Top-up	Replace	Remedy
1. Type of oil used is correct.	Y/N			o	
2. Oil level is adequate.	Y/N		o		
3. Oil in the tank is clean.	Y/N			o	
4. Absence of dirt in oil inlet.	Y/N	o			
5. Oil level indicators can be read clearly.	Y/N	o			
6. Bottom of oil tank is clean.	Y/N	o			
7. Oil pipe is not clogged.	Y/N	o			o
8. Pipe joints are not leaking.	Y/N			o	o
9. No cracks in the oil tank.	Y/N			o	o

Table 6: Sample checklist for cleaning and inspection of an oil tank.

Note that inspection is not just a visual activity. In fact, almost all of one's senses may be used to identify abnormalities during an inspection. See Table 7 for examples of how an inspection may be carried out using one's sight, hearing, smell and touch.

In general, every identified abnormality should be remedied as quickly as possible whether by the person carrying out the inspection (for simple cases and provided that this person has been trained to carry out the remedy) or by the maintenance department (for more complex cases).

Through 5S-3 Shine, the workplace (and the equipment it houses) will be kept clean and in good condition at all times. This translates to safer work conditions and equipment being ready for use at all times.

Sense	Inspection Method
See	Examine the machine closely and look for defects (e.g., missing parts, leaks, evidence of wear and tear, deformation or colour change).
Hear	Listen for strange sounds while the machine is operating.
Smell	Use one's nose to detect burning smells (e.g., due to burning rubber) or other unusual odours (e.g., due to a leak).
Touch	Touch the machine (only if it is safe to do so) to detect excessive vibration or heat and feel for parts that are loose or wobbly.

Table 7: Examples of how one's senses may be used to detect abnormalities when inspecting a machine.

2.4.4 5S-4 Standardise

Action required: Create standards to make Sort, Straighten and Shine a habit.

5S-4 Standardise refers to strategies used to ensure that 5S-1 Sort, 5S-2 Straighten and 5S-3 Shine are always implemented and actively practised throughout a company. Standardisation requires the set up of a consistent and systematic way to carry out tasks and procedures. 5S standardisation is the result when Sort, Straighten and Shine are in place and maintained.

Steps a company can take to make Sort, Straighten and Shine (S³) a habit:

Step 1: Set up a S³ duty chart

This may involve setting up a 5S Assignment Map and 5S Schedule (see Step 2 of 5S-3 Shine) not just for Shine but also for Sort and Straighten. The task assignments and schedules for S³ may be summarised in a duty chart (see Table 8 for an example).

The duty chart in Table 8 shows who is responsible for each task, what needs to be done, where the task needs to be carried out, and when it should be carried out.

Step 2: Develop S³ standard operating procedures

S³ procedures may be developed to provide documented guidance and encourage formation of good work habits (e.g., red tagging, cleaning of workspace or equipment). Always include WSH aspects so that S³ procedures may double up as safe work procedure¹ (SWP) to ensure safety and health while carrying out S³ activities. Integrate S³ activities into regular work activities so that they can eventually become part of normal daily routine.

	Work Task	S ³ Activity			Frequency			Work Zone			Responsible Person (or Team)
		Sort	Straighten	Shine	Daily	Weekly	Monthly	A	B	C	
1	Red tagging.	o					o	o	o		
2	Layout mapping (check or create).		o				o	o	o		
3	Floor marking (check or create).		o				o			o	
4	Storage labelling (check or create).		o			o		o	o		
5	Clean workspace.			o	o			o	o	o	
6	Clean equipment.			o	o				o	o	
7	Clean storeroom.			o		o		o	o		

Table 8: Example of a S³ duty chart.

¹A safe work procedure is defined as the safest and most efficient way to perform a certain task.

Step 3: Establish the S³ operating standard

The S³ standard may be established through a visual control management system. By implementing visual controls, everyone at the workplace will be able to easily distinguish between normal and abnormal conditions at a glance. The necessary corrective action(s) may then be immediately taken to ensure zero operational downtime, continued operational effectiveness and/ or workers' safety.

Examples of how visual controls may be implemented at workplaces were introduced in Step 2 Create visual order of 5S-2 Straighten.

More ideas for S³ visual control implementation:

i. Label to indicate item, location and quantity.

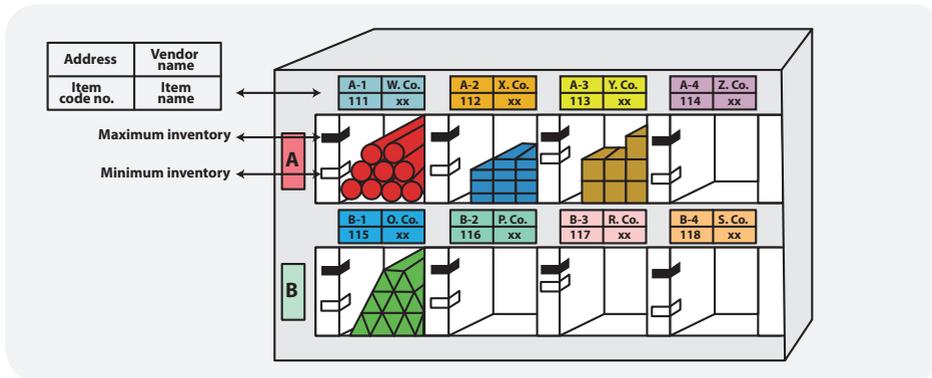


Figure 6: Label indicators to denote item's name, code number, location (e.g., A-1) and maximum and minimum quantities (defined using coloured tape).

ii. Label to indicate safe work condition.

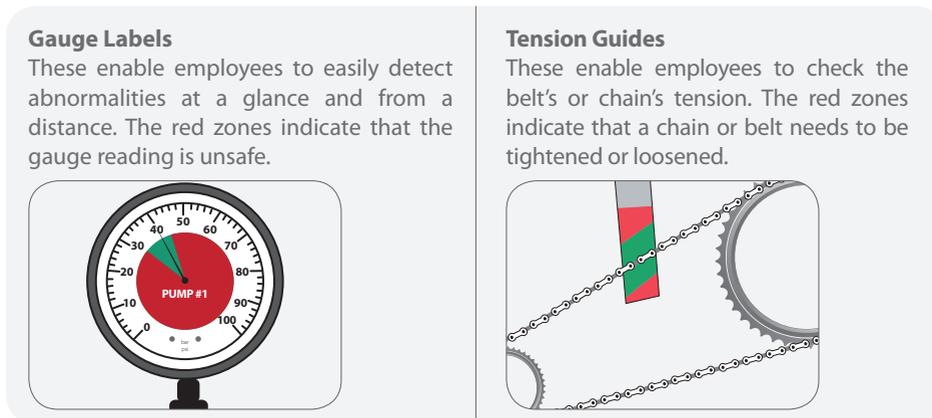


Figure 7: Labels to indicate safe (green) and dangerous (red) operating zone.

iii. Before and after photographs to indicate desired S³ standards.

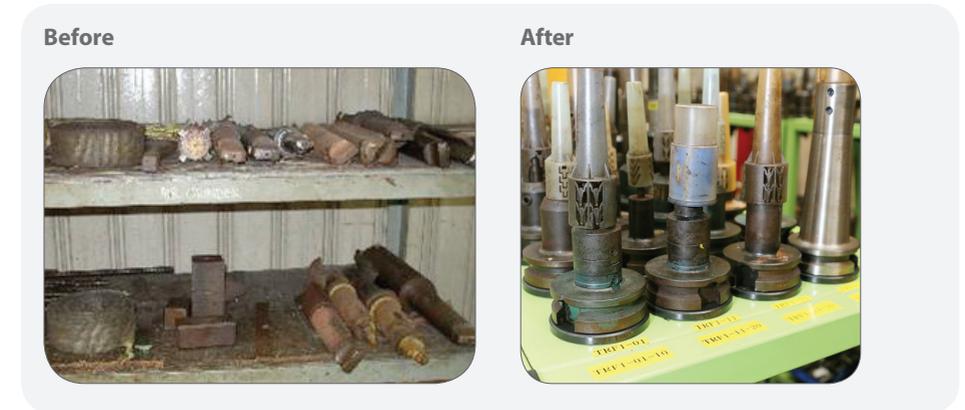


Figure 8: Impact of S³ on storage of tools at a workshop.

2.4.5 5S-5 Sustain

Action required: Maintain the standard and implement initiatives to sustain 5S activities.

A 5S programme helps companies to achieve better workplace organisation, enhanced productivity and WSH improvement. All employees must be involved in order for a 5S programme to succeed. To sustain a 5S programme, good housekeeping must not be just a chore that has to be done, it has to be something deeply embedded in a company's culture—something that everyone believes can bring about improvement in their daily work.

With initiatives for 5S-4 Standardise in place, Sort, Straighten and Shine will soon become part of a company's normal daily routine and good housekeeping will become a positive habit adopted company-wide.

For 5S implementation to remain effective, continued top management commitment and self-discipline at both individual and team levels are essential.

Steps a company can take to achieve 5S-5 Sustain include:

Step 1: Establish and implement a 5S internal audit system

This is a common strategy used by many companies to develop self-discipline in their employees and maintain the standards set in 5S-4 Standardise.

The 5S audit is essentially a quality audit with specific focus on the 5S programme.

A 5S internal audit may be used to:

- Confirm that 5S documents (e.g., S³ duty chart, S³ standard operating procedures) are in place and closely followed;
- Check that records of 5S activities are duly and properly kept;
- Verify that 5S visual controls are effective and suitably implemented;
- Identify areas and opportunities for 5S improvement; and
- Confirm that corrective actions actually solve the problem(s) for which they were intended.

See Annex B for a sample 5S Audit Check Sheet highlighting possible areas for an internal audit.

Step 2: Implement 5S initiatives for continued employee engagement

See Table 9 for examples of initiatives that may be used to sustain the momentum and interest in 5S implementation.

Area of Impact	Suggested Initiatives
Training	<p>Basic 5S Training Initial training for those new to the concept of 5S and good housekeeping.</p> <p>Advanced 5S Training Follow-up training focusing on industry practice in 5S implementation and the concept of preventive Sort, preventive Straighten and preventive Shine.</p> <p>Refresher Training This is recommended at regular intervals (e.g., every 2 to 3 years) for employees to revisit 5S fundamentals, learn from colleagues across departments and seek inspiration as they brainstorm for new 5S projects.</p>
Awareness and Communication	<p>5S Slogans These are short and memorable phrases to promote good housekeeping and/ or communicate 5S concepts (e.g., “Do your Best, Follow 5S”, “5S Begins with Removing Excess”, “A Place for Everything, Everything in its Place” or “Good Housekeeping Promotes Safety”). Slogans can be displayed on banners, posters, stickers, and so on.</p> <p>5S Banners and Posters These may be used to display 5S slogans, description of 5S activities or results or status of 5S activities. Using banners and posters is a good method to create awareness and/ or remind workers as they can be displayed anywhere in the workplace (e.g., on noticeboards, walls, fences, machines, etc.).</p>

	<p>5S Pocket Manual or Handbook This is a pocket booklet (small enough to fit into a shirt pocket) containing a summary of what 5S is all about. Every employee can use the pocket manual as a quick reference to 5S essentials whenever necessary.</p> <p>5S Newsletters These are in-house bulletins that carry updates on 5S conditions and activities. Newsletters are an effective means of communication when issued on a regular basis, for example, once a month.</p> <p>5S Photo Exhibits Photo exhibits showing the before and after of 5S implementation activities may be used to promote the impact and benefits of 5S.</p>
Continuous Learning	<p>5S In-house Seminars These are internal talks or sharing sessions on 5S typically given by 5S champions or project leaders on their implementation journey and status, challenges faced, and how problems were overcome.</p> <p>5S Department Tours Departments that have implemented 5S can serve as a model showcase for other departments. As “seeing is believing”, a tour through model departments will be an effective way to understudy different approaches to 5S implementation and foster commitment to 5S activities.</p> <p>5S Visits to Other Companies These are similar to department tours but involve visits to other companies that have successfully implemented 5S. Such visits promote cross sharing and learning within and across industry sectors.</p>
Creativity and Innovation	<p>5S Projects This involves setting up 5S project teams to work on housekeeping projects, identifying necessary resources (e.g., manpower, time, funds) and putting ideas into action.</p> <p>5S Competitions This refers to organising friendly 5S competitions between departments and/ or project teams to spur continued creativity and innovation in 5S implementation.</p> <p>Areas for competition include creativity for 5S poster or banner designs, ideas on 5S visual control, and extent of workplace improvement after 5S implementation.</p>

Awards and Recognition

5S Rewards

This involves setting up a reward system for departments, teams and individuals with good 5S performances. In particular, rewards are due to those with good 5S implementation and recommendations, those who have won 5S competitions and those who have done well in a 5S audit. Rewards may be offered on monthly or quarterly basis and take the form of an award or management commendation, cash bonuses or items such as meal vouchers and movie tickets.

Table 9: Suggested initiatives companies may undertake to achieve 5S-5 Sustain.

3. Good Housekeeping and WSH

As shown in Chapter 2, 5S is more than just housekeeping. Through 5S implementation (Sort, Straighten, Shine, Standardise and Sustain), every workplace can be made safer, healthier, more organised and productive.

On its own, housekeeping refers to any activity that results in the maintenance of an orderly, clean and neat workplace. Good housekeeping practices, both indoors and outdoors, can improve WSH and reduce the risk of fire. Housekeeping activities need to be ongoing if they are to eliminate workplace hazards and prevent accidents.

Employers have the responsibility to provide their workers with a safe workplace. This chapter takes a closer look at specific housekeeping aspects that can improve WSH and provides additional guidance in the following areas:

- Employee workspace
- Floors
- Aisles and stairways
- Walls and other surfaces
- Lighting
- Dust
- Storage
- Spills
- Tools
- Maintenance
- Employee facilities
- Waste

Housekeeping Aspect	Recommendations for Good Housekeeping
Employee workspace	<p>Workplace injuries can occur at an employee’s workspace.</p> <p>Advise employees to:</p> <ul style="list-style-type: none"> • Keep their desks and filing cabinet drawers closed when they are not in use. Remind them that it is dangerous to open their desk or filing cabinet drawers above or behind someone without first giving them a warning. • Push their chairs under their desks or the counters when not in use. • Clear their immediate working or walking space from boxes or other obstructions. Boxes and stacks of materials should not be placed along corridors and other common walkways.

	<ul style="list-style-type: none"> Place office equipment (e.g., laptops and printers) such that their electrical cords (including extension cables) do not cut across corridors or other common walkways. If this is not possible, the cords or cables should be laid in such a way to avoid becoming tripping hazards (e.g., by taping them securely to the floor). Clean and tidy up their work areas after each job and at the end of every shift.
Floors	<p>Poor floor conditions are a leading cause of Slips, Trips and Falls (STF) accidents at many workplaces.</p> <ul style="list-style-type: none"> Ensure that floors are cleaned regularly and immediately if liquids (including water) or other materials (e.g., oil, powder) are spilled. Provide areas that cannot be cleaned continuously (e.g., entrance ways) with anti-slip mats and/ or anti-slip flooring. Use anti-slip flooring in work areas that tend to be wet or greasy (e.g., industrial kitchens and washing bays). In work environments where wood is handled (e.g., woodworking workshops), implement measures to prevent the accumulation of wood chips, shavings and dust as these can become slipping and fire hazards. Repair or replace any uneven, torn, worn out or damaged flooring or carpets as soon as possible as these are potential slipping or tripping hazards. Any mat or rug found loose or wrinkled should be secured accordingly. To prevent accidents due to poor floor conditions, always deploy barriers and warning signs around the unsafe condition until it is repaired or replaced. Use highly visible reflective tape or paint to indicate changes in the level or slope of a walking surface.
Aisles and stairways	<p>Aisles and stairways facilitate the movement of people and things they might be carrying or moving. This inevitably creates opportunities for accidental collisions between people or between people and things, resulting in injuries due to Struck Against Objects (SAO) and Struck by Moving Objects (SBMO).</p> <ul style="list-style-type: none"> Ensure that aisles are wide enough to accommodate the safe movement of people and materials as well as vehicles (e.g., forklifts) in a warehouse environment. Design aisles properly so that people are encouraged to use them instead of taking shortcuts through hazardous work areas.

	<ul style="list-style-type: none"> Keep aisles and stairways clear at all times. Do not use aisles and stairways for storage (not even for temporary storage). Keeping aisles and stairways clear not only makes the workplace neater and easier to move through, clear aisles and stairways are also an important aspect of fire safety as it will facilitate smooth evacuation and entry of firefighters should the need arise. Provide adequate lighting in aisles and stairways. This will allow people to see where they are going and help prevent accidents. Install warning signs and mirrors in blind corners of aisles to improve sight-lines. Install anti-slip strips along the edge of each stairway step. Ensure that all handrails are firmly fixed and stable.
Walls and other surfaces	<p>Walls are typically painted in light colours (e.g., white or beige) as light colours reflect light (making rooms airy, bright and more conducive to work in) while dark colours absorb light.</p> <ul style="list-style-type: none"> Use contrasting colours (e.g., red, green, orange, yellow) to mark obstructions such as pillars and low-hanging overhead support beams and warn workers and passers-by of physical hazards. Contrasting colours may also be used to highlight railings, physical guards and other safety equipment, but should never be used as a substitute for physical guarding. As part of good housekeeping practice, companies should consider developing in-house guidelines to standardise the colours used within their premises.
Lighting	<p>Adequate lighting reduces the potential for accidents.</p> <ul style="list-style-type: none"> Replace lights that are dim and clean light fixtures regularly so that illumination levels can be maintained. Ensure that any lights or light fixtures that are not working are replaced or repaired immediately.
Dust	<p>Dust in the air poses a respiratory hazard while dust on the floor presents a slipping hazard. Combustible dust (e.g., sawdust), if allowed to accumulate, may result in a flash fire or dust explosion once dispersed in air. Good housekeeping also requires that work surfaces be kept free of dust and dirt.</p> <ul style="list-style-type: none"> Vacuum or wet mop dusty floors frequently. Dampening a dusty floor prior to mopping will reduce the amount of airborne dust an employee might inhale.

	<ul style="list-style-type: none"> Manually clean dust and grime that collect on machines, work surfaces and in general areas (e.g., shelves, light fixtures, windows and cupboards). Note that compressed air should never be used for removing dust. Compressed air causes greater dust dispersion and the ensuing pressure can cause dust or dirt particles to irritate one's eyes or be embedded under one's skin. To limit dust spread, install dust enclosures on every machine that generates dust. Carry out work under local exhaust ventilation so that any dust generated can be captured at source. Should dust or dirt settle in hard-to-reach places, use industrial vacuum cleaners with special extensions and fittings for cleaning walls, ceilings, corners, crevices, the interior of machines, and so on. Use a special-purpose local exhaust ventilation system or vacuum for removing hazardous dust. For example, a special dust collection enclosure fitted with a high efficiency particulate air (HEPA) filter may be used to capture fine particles of hazardous dust generated due to abrasive blasting.
Storage	<p>Proper storage (whether permanent or temporary) of materials is essential to fire safety and good housekeeping. Material storage must meet the requirements of the WSH Act, SCDF Fire Code and relevant environmental legislation.</p> <ul style="list-style-type: none"> Mark floors with coloured tape or paint to indicate storage areas and segregate storage areas from aisles meant for pedestrian or vehicle traffic (e.g., forklifts). This applies to both indoor and outdoor storage. For storing of items on shelves, storage racks or cupboards, ensure that the bigger and heavier items are placed on the lower shelves. This will increase the stability of the storage rack or cupboard. If stored materials must be stacked, ensure that they are stacked on a flat and firm foundation with bulkier and heavier items placed at the bottom of the stack. Tying or stretch wrapping the stored materials (e.g., to the pallet on which the materials are stored) will reduce the chance for accidental movement. To prevent toppling of stored materials, consider using engineered storage racks instead of stacking materials directly on top of one another.

	<ul style="list-style-type: none"> Check that stored materials do not obstruct aisles, stairways, exits, fire equipment, emergency eyewash stations, emergency showers or first aid stations. In particular, check that stacked materials do not interfere with the operation of water sprinklers. Store flammable, corrosive, toxic and other hazardous materials in approved containers in designated areas that are appropriate for the different hazards that they pose. Check that such containers are properly labelled according to the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. To minimise fire spread, store flammable materials in separate storage clusters and provide sufficient separation distance and/ or erect fire-resistant walls between storage clusters.
Spills	<p>Spills present a slipping hazard, pollute the environment and may subject employees to exposure to a hazardous substance (e.g., chemical spill).</p> <ul style="list-style-type: none"> Check storage areas for spills and storage containers for leaks during daily housekeeping inspections. If the spill is small, clean it up immediately. When cleaning a spill, use proper absorbent materials and cleaning agents. All contaminated cleaning materials should be disposed of safely. Engage the services of a toxic waste collector if necessary. Implement measures to prevent and control spills wherever possible. An important prevention and control strategy is the use of secondary containment—essentially a second level of containment that is external to and separate from the primary container, for example, by using a drip tray or by locating a storage cluster within a diked area.
Tools	<p>Tool housekeeping is important—whether in the tool room, on the rack, or at the work bench. A misplaced tool not only results in time wasted searching for it, it could also result in a dangerous condition and/ or equipment breakdown if it was left inside a machine.</p> <ul style="list-style-type: none"> Insert into the SWP that tools are to be inspected prior to each use. Any tool found damaged or worn out must be taken out of service. Provide suitable fixtures and marked locations on tool boards to allow visual control and encourage neat and orderly arrangement.

	<ul style="list-style-type: none"> • Check that tools are cleaned after use and returned to their original locations. Promptly returning the tool will reduce the chance of it being misplaced or lost. • Ensure that all sharp or pointed tools and objects are properly kept and not left exposed or lying around.
Maintenance	<p>Maintenance involves keeping buildings and equipment (including machines) in safe and good working order. When a workplace is neglected, broken windows, damaged doors, broken floor surfaces, dirty walls, and/ or defective plumbing may occur. These undesirable conditions can lower employees' morale and negatively affect one's performance at work. Such conditions can also be the cause of workplace accidents.</p> <ul style="list-style-type: none"> • Include in the housekeeping checklist the need to regularly check the condition of windows, doors, floors and sanitary facilities. Any item found broken, damaged or inoperable should be repaired or replaced as quickly as possible. • Repaint walls on regular basis (e.g., every 3 to 5 years) or when they become dirty. • Put in place a preventive maintenance programme for the inspection, maintenance, upkeep and repair of tools, equipment and machines. • Insert in the SWP the requirement for energy lock-out tag-out (LOTO) to be carried out prior to equipment or machine servicing and maintenance.
Employee facilities	<p>Facilities for employees include pantry, rest areas, washrooms, locker rooms, recreation rooms, nursing rooms, and so on. To protect employees' health and ensure their well-being, such facilities need to be adequate, clean and well-maintained.</p> <ul style="list-style-type: none"> • Ensure that washrooms are cleaned at least once per work shift. Employers should provide soap, paper towels, toilet paper and, if needed, disinfectants (e.g., in hospitals and clinics). In particular, special effort must be taken to keep floors of washrooms dry to prevent injuries due to slips and falls. • Prohibit eating and drinking in all work areas where contaminants are present. Eating areas (e.g., pantry and office canteen) must be kept separate from work areas and cleaned frequently for hygiene reasons. Remind employees (e.g., through posters) to wash their hands before each meal to prevent accidental ingestion of contaminated substances.

	<ul style="list-style-type: none"> • Provide dedicated facilities such as washing area, shower rooms and changing rooms for employees handling hazardous materials. Special arrangements include providing two locker rooms (one locker for work clothes, another for clothes worn to and from home) with a shower room in-between. Using such a double-locker-room arrangement will allow employees to wash off workplace contaminants at the end of each work day and prevent them from bringing contaminants out of the workplace and into their homes.
Waste	<p>Industrial waste must be properly managed. When it is stored in a disorganised manner, industrial waste can create hazards and end up being a serious housekeeping issue.</p> <ul style="list-style-type: none"> • Ensure that all waste receptacles are clearly labelled (e.g., general waste, recyclable waste, hazardous waste, etc.). • Place waste receptacles near areas where waste is being generated to encourage proper waste disposal. Inform employees that waste is to be disposed only in the waste receptacles in designated areas. • Advise employees to wear appropriate gloves when handling waste. This will help to avoid cuts and splinters, as well as contact with hazardous substances. • Arrange for regular bulk waste collection (by the general waste collector, recycling company and/ or toxic waste collector) to prevent the accumulation of waste materials on the company's premises.

Table 10: Recommended actions that can be taken to improve housekeeping at any workplace.

For more information on specific good housekeeping aspects, see

- Workplace Safety and Health Act
- Environmental Protection and Management Act
- Environmental Public Health Act
- Fire Safety Act
- SCDF Fire Code 2013 (also known as the Code of Practice for Fire Precautions in Buildings)
- SS 531–1: 2006 (2013) Code of Practice for Lighting of Work Places – Indoor
- SS 531–2: 2008 (2014) Code of Practice for Lighting of Work Places – Outdoor
- SS 531–3: 2008 (2014) Code of Practice for Lighting of Work Places – Lighting Requirements for Safety and Security of Outdoor Work Places
- SS 532: 2007 Code of Practice for the Storage of Flammable Liquids
- SS 567: 2011 Code of Practice for Factory Layout – Safety, Health and Welfare Considerations
- SS 586–2: 2014 – Specification for hazard communication for hazardous chemicals and dangerous goods – Part 2: Globally harmonised system of classification and labelling of chemicals – Singapore’s adaptations
- *WSH Guidelines on Flammable Substances*
- *WSH Guidelines on Workplace Traffic Safety Management*

4. Examples of Good Housekeeping

This section provides pictorial examples of 5S and good housekeeping practiced in various industry sectors.

Example 1

Manufacturing Sector (Metalworking)

	
Use of horizontal push back sliding storage racks for storing large metal parts.	Use of vertical carousel (lean lift) storage system for storing small metal components.

Figure 9: Good housekeeping at a metalworking factory.

Example 2

Manufacturing Sector (Woodworking)



Well-spaced workstations for improved workflow and sufficient individual working space.



Neatly organised hand tools placed inside drawers for fast storage and efficient retrieval.

Figure 10: Good housekeeping at a woodworking workshop.

Example 3

Construction Sector



Tidy and organised storage of construction materials for enhanced material movement and safer vehicular and worker access.



Storage of reusable items (by part size) for quick redeployment.

Figure 11: Good housekeeping at a construction site.

Example 4

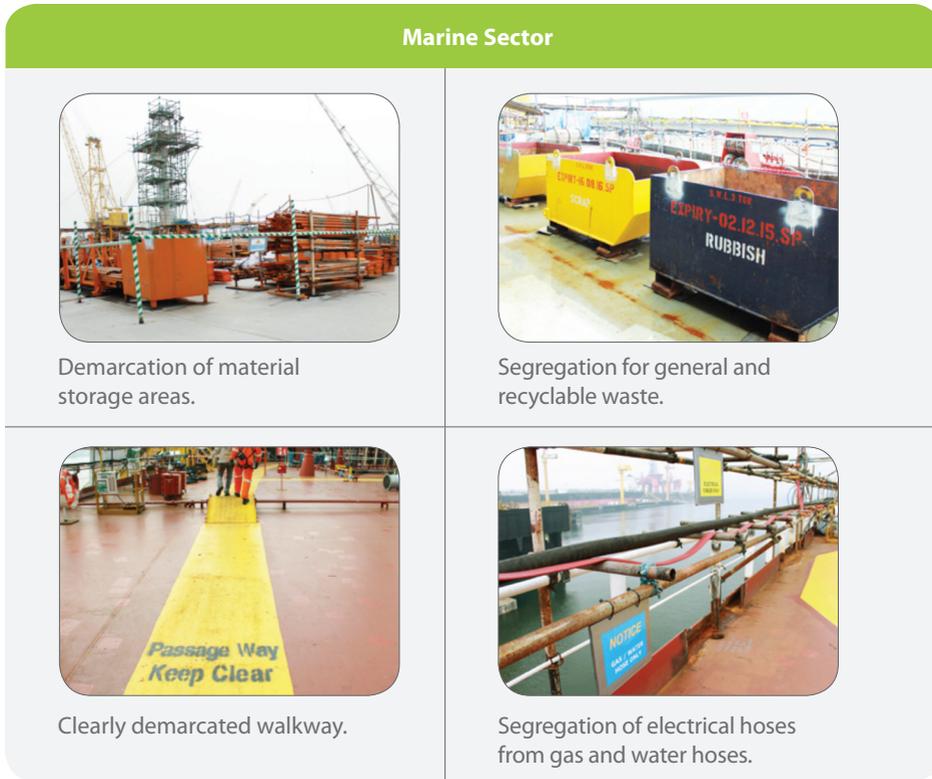


Figure 12: Good housekeeping on board a marine vessel.

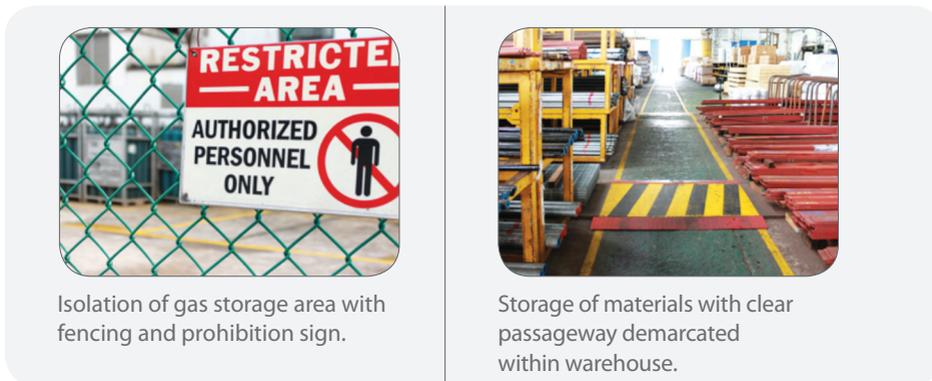


Figure 13: Good housekeeping at a shipyard.

Example 5

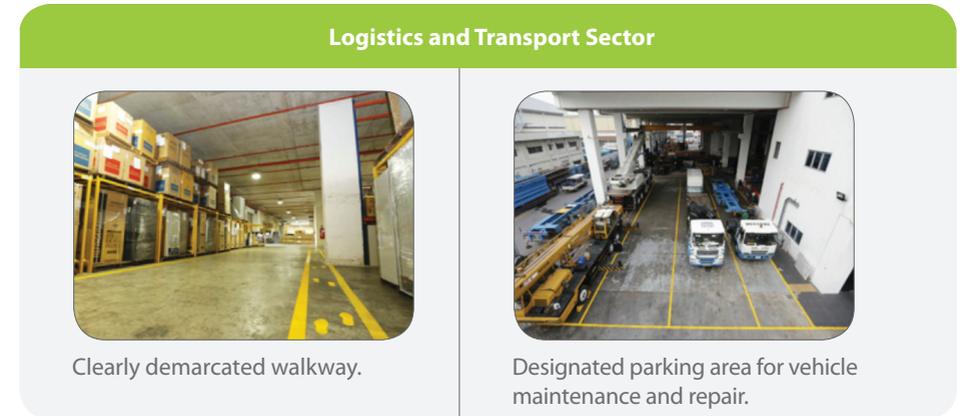


Figure 14: Good housekeeping at a storage and handling facility.

Example 6

Hospitality and Entertainment Sector



Separate compartments for storage of raw meat and raw seafood in cold kitchen.



Anti-slip coating on kitchen corridor slope.



Food trays labelled with sticker stating production date and time. Trolley covered by plastic sheet.



Cleaning tools neatly organised and kept off the floor.

Figure 15: Good housekeeping at a hotel kitchen.

5. Housekeeping Inspection Checklist

Housekeeping is applicable to every workplace. All workplaces should be subjected to regular housekeeping inspections in order to keep them clean, tidy and organised.

A housekeeping checklist may be used to facilitate on-site walkabout inspections and ensure that all critical housekeeping aspects are covered during each inspection.

Management direction needs to be sought on the desired frequency for housekeeping inspections. Typical frequencies for housekeeping inspections are daily, weekly or once every two weeks depending on the activity level at the specific work site and site-specific requirements.

The following checklist lists some of the key housekeeping aspects that have an impact on WSH. It is non-exhaustive and companies are encouraged to customise it to include housekeeping aspects that are applicable to their specific work sites.

Inspection of housekeeping aspects that affect WSH		Yes	No
1	Work area is clean, tidy and clutter-free.		
2	There are no unnecessary items in the work area.		
3	There are no food and drinks in the work area.		
4	Aisles, walkways, stairways and exits are unobstructed.		
5	There are no objects protruding into aisles and walkways.		
6	No item is placed around emergency equipment (e.g., fire extinguishers, first aid kits).		
7	Floors (e.g., tiles, boards and carpets) are in good condition.		
8	Floors are dry and free from accumulated dust, broken glass and leaks or spills (e.g., oil or water).		
9	Floor markings are highly visible and not faded.		
10	Floor openings or holes are guarded by a cover, grating or guardrail on all sides (except at entrances to stairways or ladders).		
11	Lamps or light sources are clean and provide adequate illumination for working.		
12	Warning signs are in good condition and can be clearly seen from afar.		

Inspection of housekeeping aspects that affect WSH		Yes	No
13	Cords, cables and hoses are bundled up when not in use.		
14	Machine and equipment guards are in place and secure.		
15	Tools are in good condition and in their designated location.		
16	Storage areas are clean, tidy and organised.		
17	Stacked materials are placed on a flat and firm foundation.		
18	Storage racks used are adequate for the task and in good condition.		
19	Heavier and bulkier items are placed on the lower shelves of a storage rack.		
20	Hazardous substances (e.g., flammable materials, toxic substances) are stored in compatible containers, stored under appropriate conditions and affixed with GHS labels.		
21	Physical barriers and warnings signs are installed around workplace hazards (e.g., sharp objects, protruding objects, a hot surface, a floor opening).		
22	Proper waste bins for general waste, recyclable waste, hazardous waste, and so on are provided at work areas to facilitate responsible disposal.		
23	Combustible waste is properly disposed of. For example, oily rags are disposed in closed metal waste bins.		
24	Waste (including hazardous waste) is collected regularly so that there is no unnecessary accumulation of waste.		
25	A predetermined disposal area has been designated for situations where waste materials (e.g., bulky waste, toxic waste) need to be accumulated till the next waste collection date.		

See Chapter 3 for more ideas on what may be included on the above checklist for your specific work location and activity.

Should a “No” be recorded for any of the above checklist items, immediate follow-up action is necessary to remove the unsafe condition (e.g., through 5S implementation) and prevent its reoccurrence.

6. References

Workplace Safety and Health Act

- *WSH (Risk Management) Regulations*
- *WSH (General Provisions) Regulations*
- *WSH (Construction) Regulations 2007*

Fire Safety Act

- *Fire Safety (Petroleum and Flammable Materials) Regulations*

Environmental Protection and Management Act

Environmental Public Health Act

About 5S

- *5S Good Housekeeping by Singapore Productivity and Standards Board*
- *Guide to 5S Good Housekeeping by Singapore Productivity and Standards Board*
- *Practise Good Housekeeping: 5S by SPRING Singapore*
- *5S for Operators: 5 Pillars of the Visual Workplace*

Others

- *Fire Safety Guidelines for Open Plant Structures in Oil, Chemical and Process Industries*
- *SCDF Fire Code 2013 (also known as the Code of Practice for Fire Precautions in Buildings)*
- *SS 531–1: 2006 (2013) Code of Practice for Lighting of Work Places – Indoor*
- *SS 531–2: 2008 (2014) Code of Practice for Lighting of Work Places – Outdoor*
- *SS 531–3: 2008 (2014) Code of Practice for Lighting of Work Places – Lighting Requirements for Safety and Security of Outdoor Work Places*
- *SS 532: 2007 Code of Practice for the Storage of Flammable Liquids*
- *SS 537–1: 2008 Code of Practice for the Safe Use of Machinery – Part 1: General Requirements*
- *SS 567: 2011 Code of Practice for Factory Layout – Safety, Health and Welfare Considerations*
- *SS 586–1: 2014 Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods – Part 1: Transport and Storage of Dangerous Goods*
- *SS 586–2: 2014 – Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods – Part 2: Globally Harmonised System of Classification and Labelling of Chemicals – Singapore’s adaptations*
- *UK Health and Safety Executive’s (HSE) “Warehousing and Storage: A Guide to Health and Safety”*
- *WSH Guidelines on Flammable Materials*
- *WSH Guidelines on Workplace Traffic Safety Management*

7. Annex

Annex A: Key Steps to 5S Implementation



Annex B: Sample 5S Audit Check Sheet

Department:	5S Audit Check Sheet					Auditor:	
						Date:	
0 = No Conformance 1 = Very Little Conformance 2 = Some Conformance 3 = Significant Conformance 4 = Total Conformance							
SORT	<i>Separate unnecessary from necessary items and remove unnecessary items.</i>	0	1	2	3	4	Comments or action to be taken
	Unnecessary items (e.g., machines, boxes) have been removed from work area.						
	Cupboards, drawers, storage cabinets and shelves contain only essential items.						
	Inventory only contains materials and/ or parts that are required.						
	Outdated documents have been suitably archived or disposed.						
	Red tag disposal area is well-managed (e.g., items stored only for stipulated duration).						
	Sub-total:						
STRAIGHTEN	<i>Organise for better workflow and store necessary items for easy retrieval.</i>	0	1	2	3	4	
	Necessary items (e.g., machines) are optimally located for operational efficiency and WSH.						
	Necessary items (e.g., tools) are stored based on frequency of use.						
	Access ways and work areas are clearly defined or marked and unobstructed.						
	Visual controls are in place to make work easier and more efficient.						
	Safety equipment (e.g., fire extinguishers) are in place, not expired and unobstructed.						
	Sub-total:						

5S Audit Check Sheet					Auditor: Date:		
Department:	5S Audit Check Sheet				Auditor: Date:		
	0 = No Conformance 3 = Significant Conformance	1 = Very Little Conformance	2 = Some Conformance	4 = Total Conformance			
SHINE	<i>Keep workplace clean, tidy and in good condition.</i>	0	1	2	3	4	Comments or action to be taken
	Target areas (e.g., workspace and equipment) have been defined.						
	Cleaning or inspection duties have been assigned and a schedule developed for each work zone.						
	Responsible person(s) is/ are familiar with the cleaning or inspection method.						
	Cleaning or inspection checklists are available to guide the responsible person(s).						
	Work area looks generally clean, tidy and free from clutter.						
	Sub-total:						
STANDARDISE	<i>Create standards to make Sort, Straighten and Shine (S³) a habit.</i>	0	1	2	3	4	
	S ¹ duty chart (emphasising who, what, when and where) has been set up and is in force.						
	S ² standard operating procedures (emphasising how) are available and up-to-date.						
	S ³ operating standard is clear and based on visual controls.						
	Responsible person(s) is/ are actively practicing S ² as per duty chart and standard procedures.						
	Responsible person(s) is/ are clear on the S ³ operating standard to be achieved.						
	Sub-total:						

5S Audit Check Sheet					Auditor: Date:		
Department:	5S Audit Check Sheet				Auditor: Date:		
	0 = No Conformance 3 = Significant Conformance	1 = Very Little Conformance	2 = Some Conformance	4 = Total Conformance			
SUSTAIN	<i>Maintain the standard and implement initiatives to sustain 5S activities.</i>	0	1	2	3	4	Comments or action to be taken
	5S programme is audited at least once every year.						
	Action items from the previous audit have been suitably addressed and closed.						
	Employees are actively participating in 5S initiatives (e.g., seminars, tours, competitions).						
	Initial or refresher training is organised for new hires or existing employees.						
	Employees are able to explain the benefits of 5S and the impact of 5S on their work or work area.						
	Sub-total:						Difference (+/-) from previous audit
	Final Score:						

8. Acknowledgements

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Company	Figure
Cameron Singapore Pte Ltd	Photos in Table 5; and Figures 8 and 9
Singapore Furniture Industry Council (SFIC) Institute Pte Ltd	Figure 10
Woh Hup Pte Ltd	Figure 11
Sembcorp Marine Ltd	Figures 12 and 13
Bok Seng Logistics Pte Ltd	Figure 14
Resorts World Sentosa Pte Ltd	Figure 15

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