

# THE IMPORTANCE OF THE 6TH "S"

Going beyond the  
traditional 5S methodology



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## BACKGROUND

## THE ORIGINS OF 5S

While sometimes credited to shipbuilders in 16th century Venice, Japan is where “5S” was first heard of as one of the techniques that enabled what was then termed ‘Just in Time Manufacturing’. The Massachusetts Institute of Technology’s 5-year study into the future of the automobile in the late 1980s identified that the term was inappropriate since the Japanese success was built upon far more than components arriving only at the time of requirement. John Krafcik, a researcher on the project, ascribed Lean to the collective techniques being used in Japanese automobile manufacturing; it reflected the focus on waste in all its forms that was central to the Japanese approach. Minimized inventory was only one aspect of performance levels in companies such as Toyota and only arose from progress in fields such as quality assurance and Andon boards to highlight problems for immediate action.

5S was developed by Hiroyuki Hirano within his overall approach to production systems. Many Western managers coming across the approach for the first time found the experience one of enlightenment. They had perhaps always known the role of housekeeping within optimized manufacturing performance and had always known the elements of best practice. However, Hirano provided a structure for improvement programs. He pointed out a series of identifiable steps, each building on its predecessor. Western managers, for example, had always recognized the need to decide upon locations for materials and tools and upon the flow of work through a work area; central to this (but perhaps implicit) is the principle that items not essential to the process should be removed – stored elsewhere or eliminated completely. By differentiating between Seiri and Seiton, Hirano made the distinction explicit. He taught his audience that any effort to consider layout and flow before the removal of the unnecessary items was likely to lead to a sub-optimal solution.

Equally the Seiso, or cleanliness, phase is a distinct element of the change program that can transform a process area. Hirano’s view is that the definition of a cleaning methodology (Seiso) is a discrete activity, not to be confused with the organization of the workplace, and this helps to structure any improvement program. It must be recognized, however, that there is inevitably an overlap between Seiton and Seiso. Western managers understood that the opportunities for various cleanliness methodologies vary with the layout and storage mechanisms adopted. However, breaking down the improvement activity in this way clarifies that the requirements for the cleanliness regime must be understood as a factor in the design aspect of Seiton. As noted by John Bicheno, Toyota’s adoption of the Hirano approach, is ‘4S’, with Seiton and Seiso combined – presumably for this very reason. The improvement team must avoid the trap of designing the work area and then considering the cleanliness or tidiness mechanism.

Hirano also reminded the world of the Hawthorne effect. We can all introduce change and while people in the business consider the change program to be under management focus the benefits of the change will continue, but when this focus has moved (as is inevitably the case) performance once more slips. Western managers may have benefited from the distinction between the procedural or mechanical elements, Seiketsu, of keeping these matters in focus and the culture change, Shitsuke, which is a distinct approach to bringing about a new way of working. Several publications on the subject in the West have questioned whether this culture can really be tackled as part of an exercise of relatively limited scope. The broader kaizen, or continuous improvement, approach is built, among other things, upon the company’s valuation of all members of the workforce. If employees don’t feel valued within the overall company culture, perhaps the change required falls outside the limits of a housekeeping improvement program.



METHODOLOGY

## 5S TODAY

5S methodology (or what Toyota called the Total Production System) uses a list of five Japanese words—Seiri (sort), Seiton (set in order), Seiso (shine), Seiketsu (standardize), and Shitsuke (sustain)—to describe how to organize a work space for efficiency, improved productivity, and quality by identifying and storing tools and materials used, emphasizing housekeeping to clear and maintain the work space, and making these practices standard and sustainable.

### **Safety is implied in every step of the 5S method:**

- » Safety is improved and hazards reduced when you sort through a work space, removing what's unnecessary and improving accessibility and visual communications.
- » Safety benefits from setting an orderly work flow and ensuring that work is not conducted in a haphazard manner or by taking shortcuts.
- » Housekeeping, or putting a shine on things, is fundamental to safety—a basic tenet. You can't have a zero-accident culture or any type of 100 percent safety culture without an emphasis on an orderly, organized, clean work space and work flow. Housekeeping is a shared safety responsibility, ongoing and never-ending; it is a safe behavior that is an essential first step in developing a culture of safety.
- » Standardizing work practices establishes conformity, which is critical to safety success. For work to be done safely, it must be done in compliance with a set of standards. OSHA regulations are all about establishing conformity in how safety is practiced.
- » These five work practices—removing waste and unnecessary tools and materials, setting a clean and orderly work space and work flow, effective housekeeping, and compliance with work norms and rules—all must be sustainable. They are behaviors that must become routine, embedded habits. The 5S practices are also a mindset or attitude that is ingrained in employees as “the way things are done around here.” This, by the way, is the definition of culture—acceptance and ownership of the way things are done.

### **The ongoing need for the 6th “S”**

Over the last decade, American and Canadian companies have added 6S—safety. These organizations were not comfortable with the idea that safety is assumed to be, or implied to be, part of the way things are done. Safety needs to be called out, recognized and committed to as a separate step.

Let's face reality: Human nature is often at odds with safety. Few of us demand or obsess over a clean and tidy home or work space. How often do we take shortcuts, especially when the pressure is on to get a job done quickly? How many of us religiously obey speed limits when driving?



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This reality of human behavior—often taking risks and believing “accidents won’t happen to me”—is the reason for safety and health management systems, safety training, safety inspections, safety meetings, the use of personal protective equipment (PPE), safety rules, OSHA regulations, and the need to develop and sustain safety cultures.

Putting the focus on 6S as a specific organizational value and ongoing commitment has many benefits:

- » **Less stress on employees;**
- » **Less fatigue;** less wasted time and movements walking distances to get a ladder or a tool;
- » **Fewer tool and equipment breakdowns;** less need for repairs, less downtime, and reduced risk-taking;
- » **Improved ability to recognize hazards** by reducing waste, clutter, and debris to improve visibility in the workplace;
- » **Increased employee involvement and engagement in safety,** as employees take ownership for shared responsibilities such as housekeeping, reporting hazards, inspections, observing co-worker behaviors and giving positive or corrective feedback, and generally watching out for the safety of their peers;
- » **Reduction of injuries and fatalities,** because good housekeeping reduces slips, trips, and falls. Securely stacked materials reduce the chance of being struck by a falling object. Exits are not blocked, fire extinguishers are accessible, and overall fire safety improves. “Struck-by” injuries are reduced by removing protruding nails and other obstacles. Ergonomic-related injuries such as strains, sprains, and back injuries are lessened by having tools and materials easily accessible—without over-reaching or using awkward body positions;
- » **Removal of dust accumulations** that can ignite and cause serious injuries or fatalities (SIFs) by flash fires or combustible dust explosions (the U.S. Chemical Safety Board identified 281 combustible dust incidents between 1980 and 2005 that led to the deaths of 119 workers, injured 718, and extensively damaged numerous industrial facilities);
- » **Reinforcement of the requirement to comply with OSHA standards,** specifically regarding housekeeping. OSHA references the practice in numerous standards, including the new walking-working surfaces (1910.22); flammable liquids (1910.106); explosives and blasting agents (1910.109); sanitation (1910.141); material handling (1910.176); and asbestos (1910.1001);



Of special note, OSHA’s walking-working surfaces standard, issued in November, 2016, states:

- 1) All places of employment, passageways, storerooms, service rooms, and walking-working surfaces are kept in a clean, orderly, and sanitary condition;
- 2) The floor of each workroom is maintained in a clean and, to the extent feasible, in a dry condition;
- 3) Walking-working surfaces are maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow and ice;
- 4) Walking-working surfaces are inspected regularly and as necessary, and maintained in a safe condition.

### The need for messaging

6S is not a one-time program or safety idea. 6S represents a culture of safety, a vision for safety, an organizational-wide commitment to safety, so it needs promotion and marketing to sustain employee buy-in.

To reinforce this message, post 6S communication visuals throughout your facility in key high-traffic areas to serve as daily reminders. 6S banners capture attention, enhance support, and spread the message, communicating the importance and impact of 6S on the company.

Messaging is essential to sustain 6S as a company and individual value, set of work practices, and a shared responsibility of all employees. Messaging techniques keep 6S top of mind, reinforce its core principles, and guide employees in how to use each of the 5S initiatives while showing the link between the 5S’s and 6S. 6S messaging in particular explicitly talks about safety to build safe behaviors and attitudes and reduce the chance of it being lost in the sequence of the 5S’s.

6S is all-encompassing; it has no beginning or ending. It is not a priority. Priorities come and go and change; 6S becomes woven into the fabric of an organization. It is a way of work life. A culture.

### The housekeeping imperative

6S will not be a success without diligent housekeeping practices. And let's be clear: housekeeping is more than being neat and tidy. It's more than basic cleanliness.

Housekeeping involves risk assessment. Inspections conducted before and after a housekeeping sweep identify hazards and their causes and come up with controls and solutions. Risk assessments rank the significance of hazards based on 1) the potential severity of injury that a hazard can cause; and 2) the probability or likelihood of the hazard to cause an injury. To arrive at a risk priority number, risk is assessed by multiplying the severity x the likelihood x number of people exposed. These numbers are compared to determine the priority for taking action.



### Housekeeping hazards include:

- » Walkways obstructed by tools, materials, trash, debris, wire, and cords that can cause trips;
- » Stacked materials to a height that could be unstable and cause objects to fall;
- » Emergency exits that are blocked;
- » Fire extinguishers and sprinkler systems that are blocked by equipment or materials;
- » Emergency showers and eyewash stations that are blocked by items not put in their proper location;
- » Flammable materials—solvents, chemicals, oily rags, etc.—that are not stored in approved containers in designated areas and/or are not disposed of properly;
- » Greasy, wet, dirty surfaces, which are prone to slips and falls;
- » Protruding nails, wires, steel strapping and/or poorly stacked items, which can cause cuts, punctures, and tears of hands, feet, and other body parts;
- » Loose paper, cardboard, oily rags, and other waste strewn about, which creates fire hazards;
- » Safety data sheets not placed near dangerous chemicals and toxic substances, which can leave employees without instructions if there is a spill, leak, or emergency exposure;
- » Poor lighting and burned-out bulbs that are not replaced, which can cause struck-by and caught-between injuries, as well as slips, trips, and falls;
- » Blind spots and corners without mirrors or warning signs, which can cause collisions;
- » Damaged/worn flooring, which creates trip hazards;
- » Blocked aisles, which encourage workers to take shortcuts;
- » Drip pans and absorbents that are not used where spills are possible, creating exposure hazards and slip and fall hazards;
- » Scrap containers that are not placed where waste is produced, creating clutter;
- » Tools that are not returned quickly after use, increasing the chance of being lost or misplaced and causing employees to take unnecessary risks looking for them;
- » Damaged or worn tools that are not taken out of service or not regularly inspected, cleaned, and repaired—increasing the risk of a co-worker being hurt.



### Housekeeping targets

As mentioned, keeping a facility safe through good housekeeping practices is all-encompassing. Cleaning and putting things in their place occurs not only at the end of a shift or day, but throughout the flow of work. Sorting, setting, and putting a shine on applies to floors; aisles; operation areas; work stations; corners; stairways; ductwork; ventilation systems; beneath equipment; closets and cabinets; locker rooms; offices; loading docks; plumbing; conveyance equipment; machinery; dies, jigs, bits; electrical parts, systems, wiring, and cords; shelves; sheds; basements; stock yards; and boiler rooms.

### Housekeeping benefits

Good housekeeping practices reflect a professional, well-run business. For OSHA inspectors, customers, and other visitors, housekeeping is often the first evidence noticed of how seriously a company takes safety. Housekeeping largely influences first impressions.

Housekeeping good or bad also influences the attitudes of employees. Broken windows, damaged doors, defective plumbing, broken floor surfaces, burned-out light bulbs, and odors and smells that are not fixed, replaced, or investigated quickly can lead to the damaging effects of the “broken windows theory.”

The broken windows theory, introduced in the 1980s by social scientists to apply primarily to law enforcement, holds that visible signs of antisocial behavior and civil disorder create an environment that encourages further, more serious disorder and



crimes. However, it has also been applied to such areas as education and real estate, postulating in the latter that better monitoring and cleaned-up streets and properties create a better environment for attracting new residents. In a neighborhood where building windows are broken, cracked, or shattered and not fixed or replaced, the lack of action can be perceived as a lack of caring and accountability by residents. This absence of “buy-in,” responsibility, and commitment is a turn-off to potential new neighbors.

In education, the theory is used to promote order in classrooms and school cultures. If foul language, bullying, lack of discipline, fighting, and teacher abuse goes on without correction, students are encouraged to continue and increase these behaviors. A study conducted by Johns Hopkins researchers in the early 2000s found a positive correlation between the physical appearance of a school and classroom setting and the degree of teaching and learning that exists.

You can see, then, how the broken windows theory applies to workplace housekeeping. If clutter is not eliminated, waste removed, and damaged property fixed, employees quickly conclude that supervisors and managers don’t care about the work environment—and, by extension, are not committed to a safe workplace free from hazards.

Employees see no evidence of a safety culture. They turn off and drop out, become disengaged and apathetic. Some will turn outright hostile toward safety initiatives that amount to empty promises. Costs go beyond injuries, a poor safety record, and possible OSHA fines. Productivity drops. Quality work suffers. Morale erodes. Absences increase. Turnover can increase. And it all starts with housekeeping—the heart of 6S practices.

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**This is why 6S—safety—needs to stand on its own as a company norm, value, vision, and daily commitment.**

#### References:

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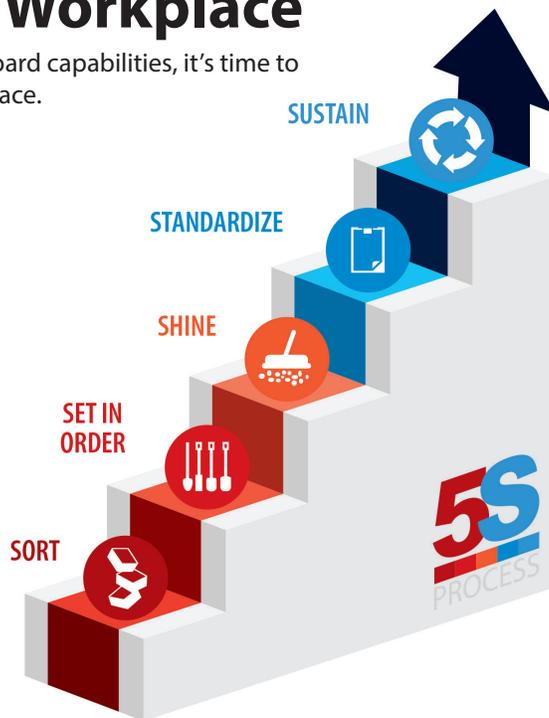


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# 5S Solutions For The Visual Workplace

Now that you've been introduced to our 5S Product Line & Custom Board capabilities, it's time to recap why each of the 5 Steps are critical to achieving a Visual Workplace.

- 1 SORT**  
Purge & organize work area
- 2 SET IN ORDER**  
Understand where items belong to be easily accessible when needed
- 3 SHINE**  
Clean work area to be free of dirt and clutter
- 4 STANDARDIZE**  
Document & enforce/reward successful 5S behaviors
- 5 SUSTAIN**  
Continuously audit and improve process



## Let NMC be your #1 resource for implementing 5S, and achieving a Visual Workplace!

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### 5S Overview

An depth overview of the 5S Process, and steps which are required to maintain it's discipline.



### Visual Workplace

An introduction to the Visual Workplace, and all of its elements.



### Red Tag Techniques

A guideline for identifying inventory that is either needed or can be discarded.



### Workplace Organization Guidelines

An assessment guideline for the current state of an organization prior to the 5S process.



### Assessment Tool Worksheet

Grading all areas of an organization once 5S has been implemented.

## 5S Simplified!

Watch a short video that gives you a short and easy way to simply explain 5S to your teams. Use this as a lead with our other tools to begin your 5S education process.

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