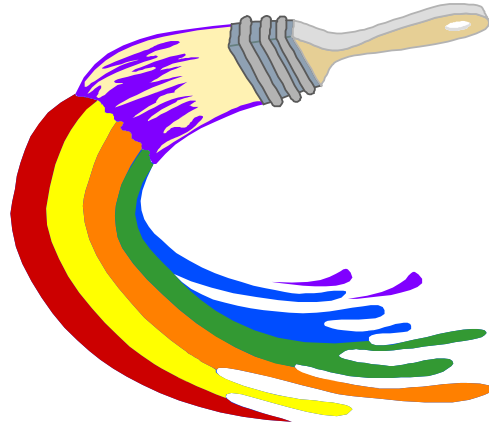


# 5-MTS



# Practical Definition

---

- **Sort -** Eliminate what is not needed
- **Set to Order -** A place for everything and everything in its place
- **Shine -** Cleaning and looking for ways to keep it clean
- **Standardize -** The methods used to maintain first 3 S's
- **Sustain-** Daily, weekly, monthly routines  
Accountability and 5S Audits

5S Principles that all lead into supporting.....

**Safety -** Keeping areas safe and fostering a strong safety conscious

# Lean Principles

---

- Specify Value In The Eyes Of The Customer
- Identify Value Stream, **Eliminate Waste** & Variation
- Make Value Flow At Pull Of Customer
- **Involve & Empower Employees**
- **Continuously Improve In Pursuit Of Perfection**

# Lean Overview

---

## 5S

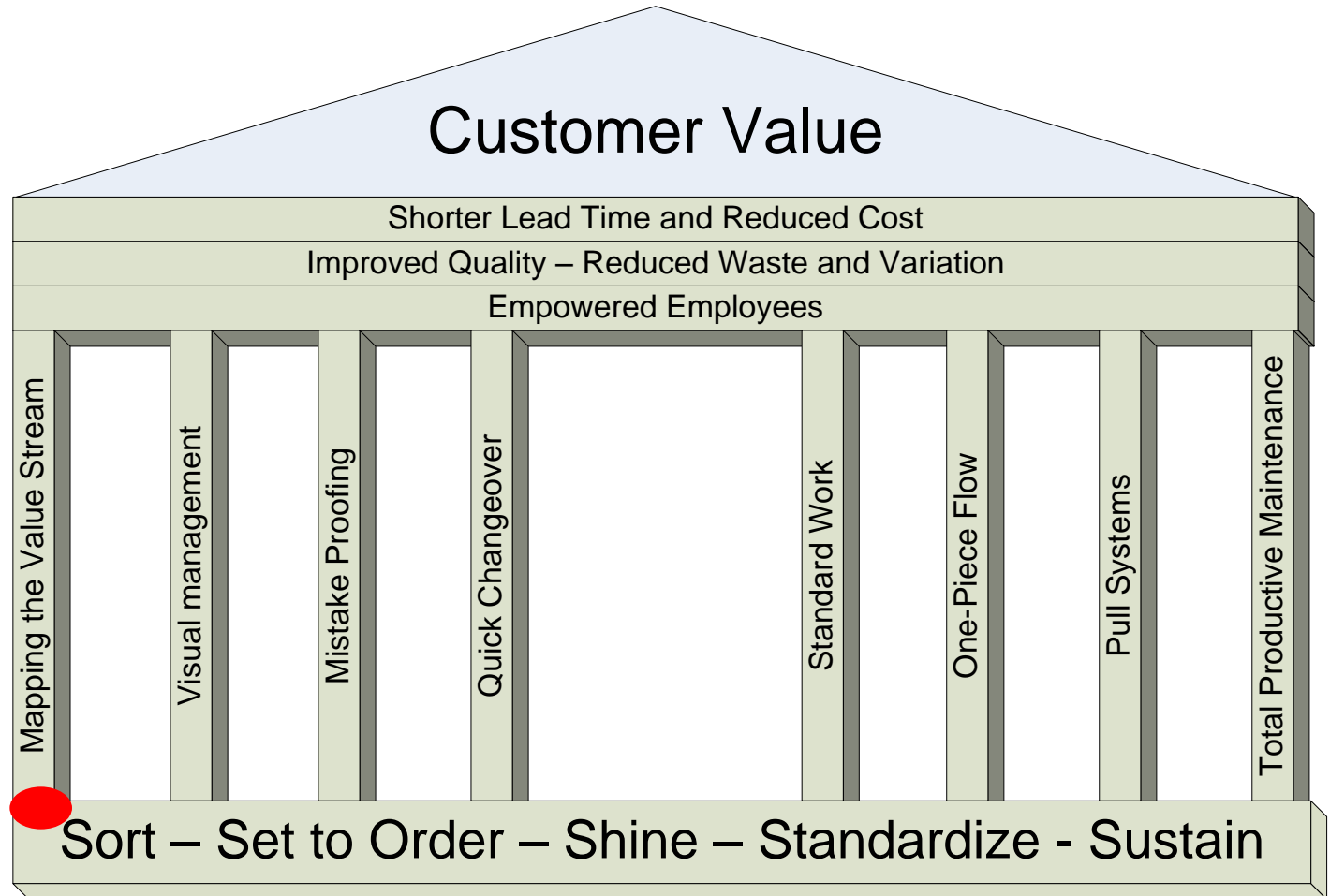
The foundation of all continuous improvement methods

Sort – Set to Order – Shine – Standardize - Sustain

You are  
here



# Lean Overview



# Why 5S

---

- **Promotes Safety**
- **Promotes flow**
- **Reduces searching**
- **Reduce unplanned downtime**
- **Increase Quality**
- **Eliminate distractions**
- **Reduce inventory and space**
- **Looks Professional and Leaves a 1<sup>st</sup> Impression!**

# Sort

## RED TAG STRATEGY

| RED TAG              |  |                               |
|----------------------|--|-------------------------------|
| Category             | 1. Raw material<br>2. Inventory stock<br>3. Semi-finished goods<br>4. Finished goods<br>5. Scrap<br>6. Dies and jigs<br>7. Tools and fixtures<br>8. Measuring devices<br>9. Documents<br>10. Other |                               |
| Item name and number |  |                               |
| Quantity             | Units  | Value                         |
| Reason               | 1. Not needed<br>2. Defective<br>3. Not needed again<br>4. Scrap material<br>5. No customer  | 6. Other                      |
| Shipped by:          | Department/Business Unit/Product Center  |                               |
| Disposal method      | 1. Discard<br>2. Recycle<br>3. Move to red-tag storage site<br>4. Move to regular storage site<br>5. Other   | Disposal complete (signature) |
| Priority date:       | Checked date:  |                               |

ATTACH TO ALL  
UNNECESSARY ITEMS

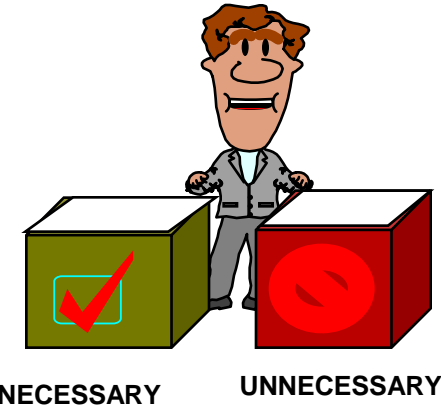
**SORT**

CATEGORIZE  
NECESSARY ITEMS:

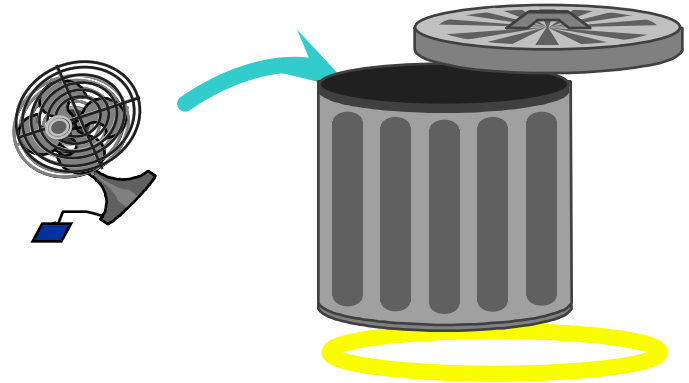
- \* RARELY USED
- \* OCCASIONALLY USED
- \* FREQUENTLY USED



DIVIDE ITEMS INTO  
TWO CATEGORIES:



DISCARD  
UNNECESSARY ITEMS



# Separating Needed from Not Needed

Needed



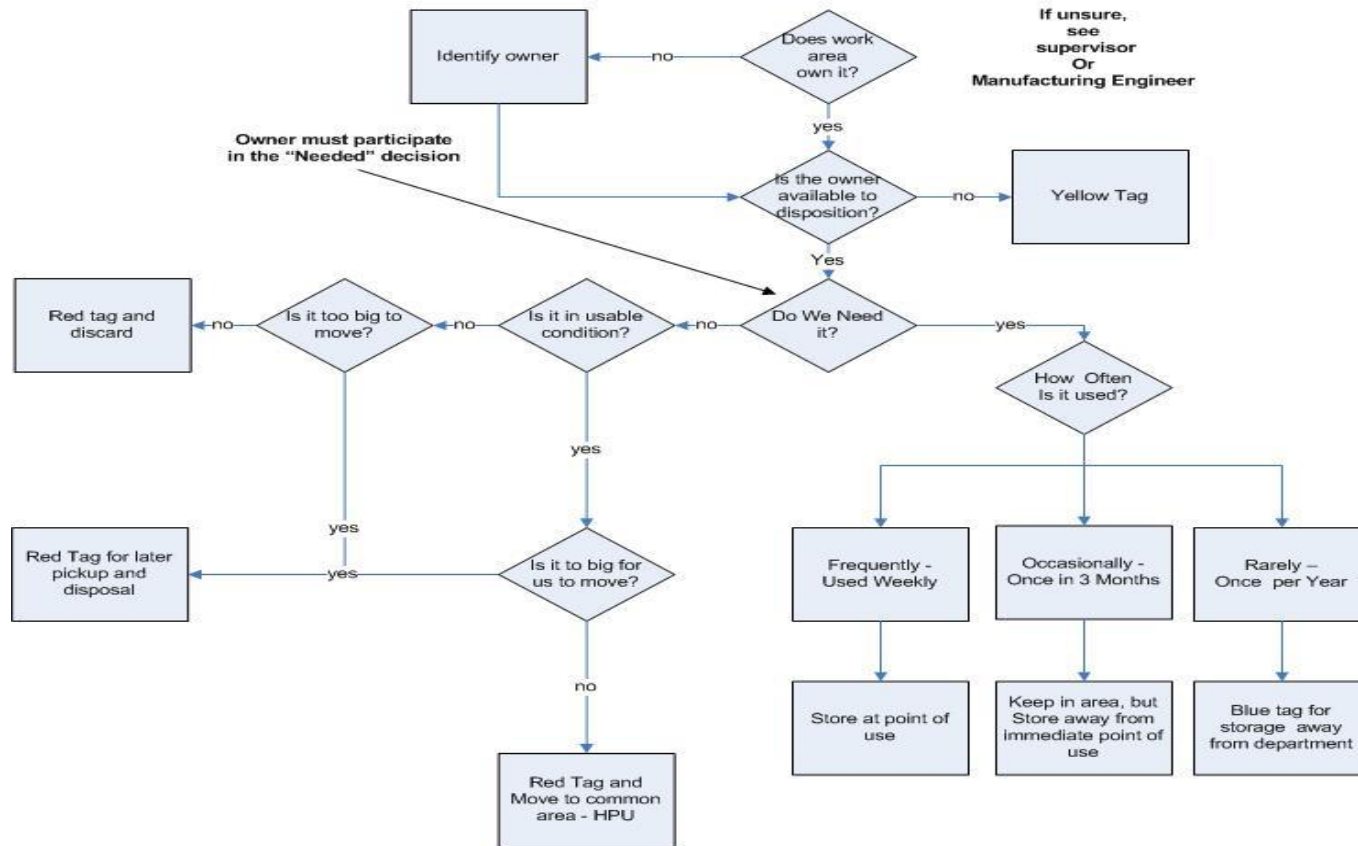
Questionable





# Red Tag Process

## Red Tag Process – Rev D



### Tag Definitions



# Red Tag

| RED TAG                                     |                            |                                       |
|---|----------------------------|---------------------------------------|
| <b>Category</b>                             | 1. Equipment               | 6. R&D Tools and Equipment            |
|   | 2. Dies, Jigs and Fixtures | 7. Project Material                   |
|   | 3. Tools and Supplies      | 8. Project Tools and equipment        |
|   | 4. Measuring devices       | 9. Documents                          |
|   | 5. R&D Material            | 10. Other                             |
| <b>Item Name, Number and/or Description</b> |                            |                                       |
| <b>Quantity</b>                             | Units                      | \$ Value                              |
|   |                            |                                       |
| <b>Reason</b>                               | 1. Not Needed              | 4. Use Unknown                        |
|   | 2. Defective               | 5. Other                              |
|   | 3. Scrap                   |                                       |
| <b>Owned By: Department, Group, etc.</b>    |                            |                                       |
| <b>Disposal By: Department, Group, etc.</b> |                            |                                       |
| <b>Disposal Method:</b>                     | 1. Discard                 | <b>Disposal Complete:</b> (signature) |
|   | 2. Return                  |                                       |
|   | 3. Move to HPU area        |                                       |
|   | 4. Other                   |                                       |
| <b>Today's date:</b>                        |                            | <b>Disposal Date:</b>                 |

# Red Tag Technique

---

**Red Tagging** is a visible way to identify what is not needed in the work place. **Red Tags** ask “Why am I here?” and support the first “S” - Sort.

The **Red Tag** Technique involves the following steps:

1. Establish the rules for distinguishing between what is needed and what is not.
2. Identify needed and unneeded items and attach **Red Tags** to all unneeded items. Write the specific reason for **Red Tagging** and sign and date each tag.
3. Remove **Red Tag** items and temporarily store them in a holding area.
4. Sort through the **Red Tag** items and dispose of those which are truly extra. Other items can be disposed of at a later stage when it is clear that they have no use. *Ensure that all interested people agree.*
5. Determine ways to improve the work place so that unnecessary items do not accumulate.
6. Continue to **Red Tag** regularly.

# Yellow Tag

| YELLOW TAG                                  |                            |                                       |
|---|----------------------------|---------------------------------------|
| <b>Category</b>                             | 1. Equipment               | 6. R&D Tools and Equipment            |
|   | 2. Dies, Jigs and Fixtures | 7. Project Material                   |
|   | 3. Tools and Supplies      | 8. Project Tools and equipment        |
|   | 4. Measuring devices       | 9. Documents                          |
|   | 5. R&D Material            | 10. Other                             |
|   |                            |                                       |
| <b>Item Name, Number and/or Description</b> |                            |                                       |
| <b>Quantity</b>                             | Units                      | \$ Value                              |
|   |                            |                                       |
| <b>Reason</b><br>Owner complete             | 1. Not Needed              | 4. Other                              |
|   | 2. Defective               | 5. Used Frequently                    |
|   | 3. Scrap                   | 6. Used Rarely                        |
| <b>Owned By:</b><br>Department, Group, etc. |                            |                                       |
| <b>Dispositioned By:</b><br>Owner Complete: |                            |                                       |
| <b>Disposition Date:</b>                    |                            |                                       |
| <b>Disposal Method:</b><br>Owner complete   | 1. Discard                 | <b>Disposal Complete:</b> (signature) |
|   | 2. Return                  |                                       |
|   | 3. Red Tag                 |                                       |
|   | 4. Blue tag                |                                       |
| <b>Today's date:</b><br>Owner complete      |                            | <b>Disposition date Date:</b>         |

# Yellow Technique

---

**Yellow Tagging** is a visible way to identify items belonging to other departments and may not be needed in the work area . **Yellow Tags** ask “Where should I Be?” and support the first “S” - Sort.

The **Yellow Tag** Technique involves the following steps:

1. Establish the rules for distinguishing between what is needed and what is not.
2. Identify items belonging to others not in the immediate area and attach **Yellow Tags**. Write the specific reason for **Yellow Tagging** and sign and date each tag.
3. Retain **Yellow Tag** items and store them in the area., until they can be readily determined and managed by the original owner
4. Sort through the **Yellow Tag** items and if needed, determine ownership, and follow through with the groups identified to have them dispositioned accordingly . Items can be disposed of at a later stage when it is clear that they have no use. *Ensure that all interested people agree.*
5. Determine ways to improve the work place so that items from other areas are not readily stored or accumulate in separate locations
6. Continue to **Yellow Tag** regularly .

# Blue Tag

| BLUE TAG                                    |                            |                                |
|---|----------------------------|--------------------------------|
| <b>Category</b>                             | 1. Equipment               | 6. R&D Tools and Equipment     |
|   | 2. Dies, Jigs and Fixtures | 7. Project Material            |
|   | 3. Tools and Supplies      | 8. Project Tools and equipment |
|   | 4. Measuring devices       | 9. Documents                   |
|   | 5. R&D Material            | 10. Other                      |
|   |                            |                                |
| <b>Item Name, Number and/or Description</b> |                            |                                |
| <b>Quantity</b>                             | Units                      | \$ Value                       |
| <b>Part Number</b>                          |                            |                                |
| <b>Project Number</b>                       |                            |                                |
| <b>Owned By (and Phone #)</b>               |                            |                                |
| <b>Cost Center</b>                          |                            |                                |
| <b>Grid ID:</b>                             |                            |                                |
|   |                            |                                |
|   |                            |                                |
|   |                            |                                |

# Blue Tag Technique

---

**Blue Tagging** is a visible way to identify what is not needed now in the work place. **Blue Tags** ask “Do I need to be here now?” and support the first “S” - Sort.

The **Blue Tag** Technique involves the following steps:

1. Establish the rules for distinguishing between what is needed and what is not.
2. Identify frequently used and infrequently used items and attach **Blue Tags** to all items that could be stored elsewhere for eventual return and use. Write the specific reason for **Blue Tagging** and sign and date each tag.
3. Move **Blue Tag** items and temporarily stage them in a holding area within the work space.
4. Sort through the **Blue Tag** items and arrange for support/transport of those which are not immediately needed, to off-site or supplemental storage areas. *Ensure that all interested people agree.*
5. Determine ways to improve the work place so that infrequently used items do not accumulate, and or do not arrive until needed
6. Continue to **Blue Tag** regularly .

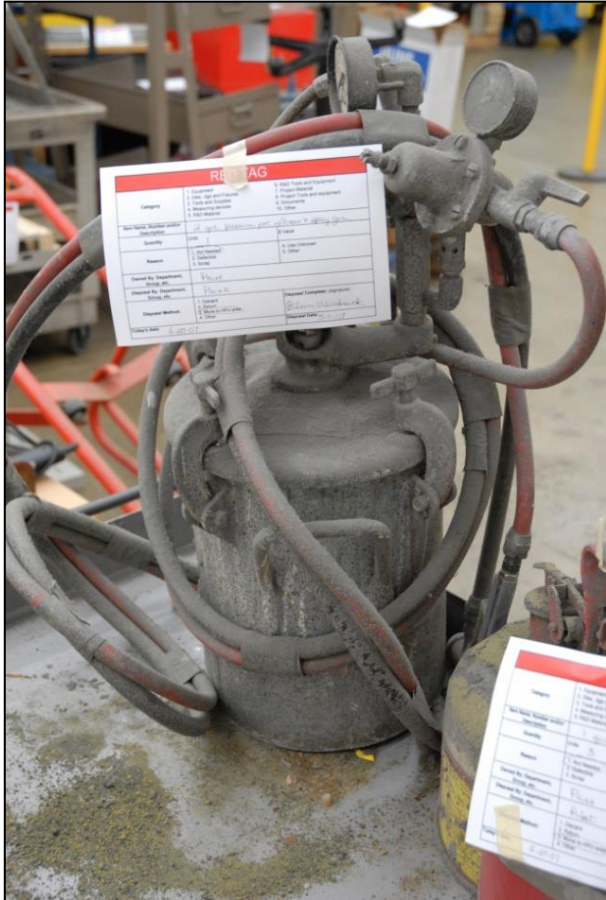
# Tips for Tagging

---

- **People look at items as personal possessions. They are company possessions. People are the caretakers of the items.**
- **Plant people take advantage of outsider's "fresh eyes" by creating an atmosphere where outsiders will feel comfortable in questioning what's needed.**
- **Tag *anything* not needed. One exception: Don't red tag people unless you want to be red tagged yourself!**
- **If in doubt, tag it! - The tag can always be removed**



# SORTING

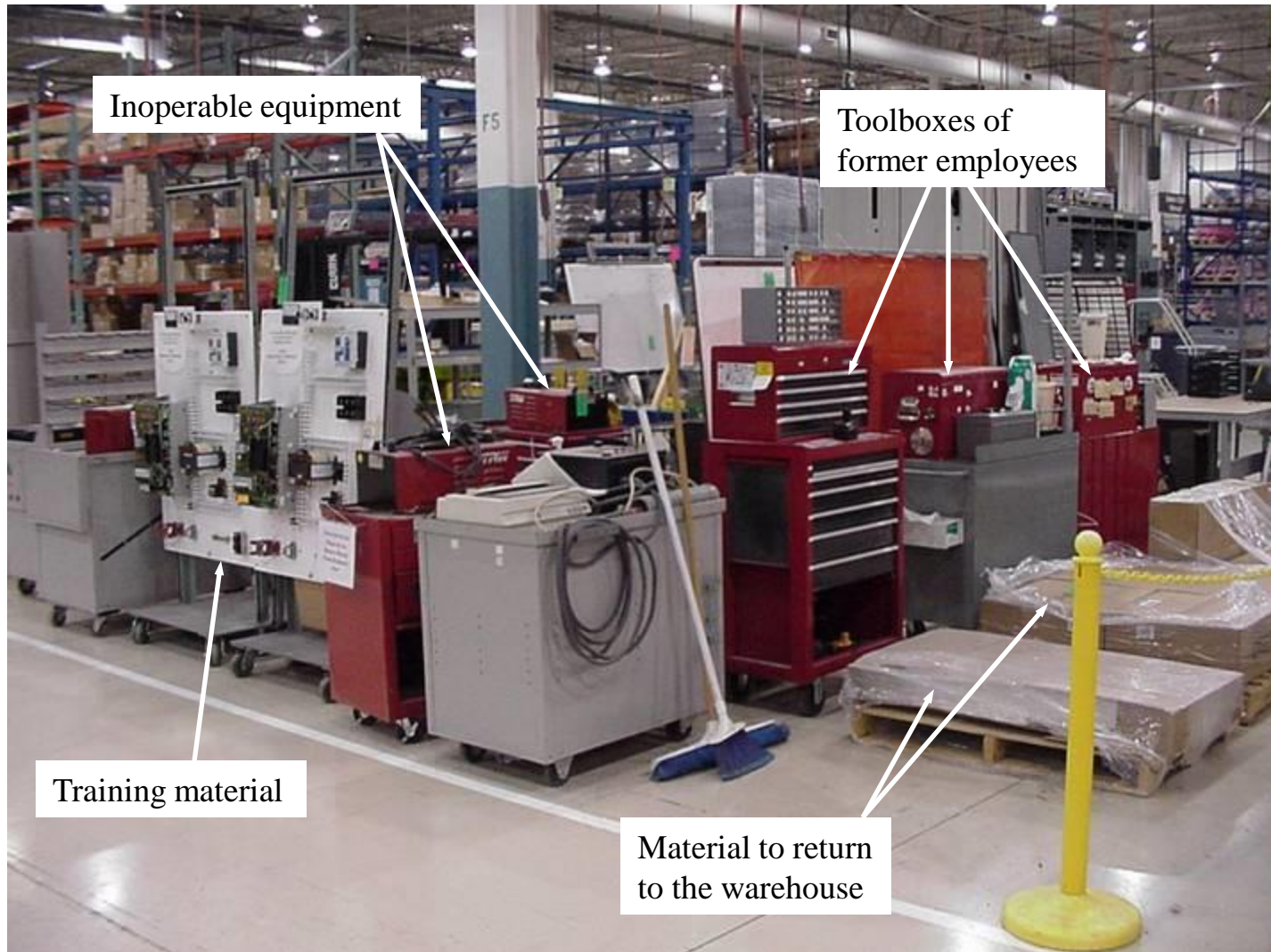


Equipment item had not been used in many years



Some areas will have little to discard

# Tagged Items



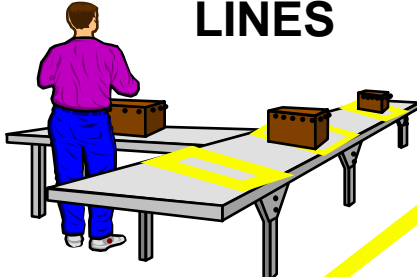
# Red Tagged Items

**10 metal carts, 10 ft of racking, drill press, die lift and a lot of tooling!!!**



# Set To Order

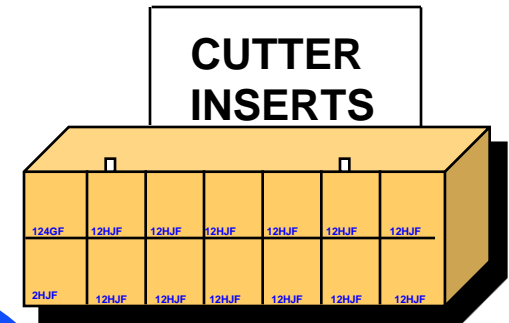
## IDENTIFICATION LINES



## MONITORING/ MEASURING ITEMS



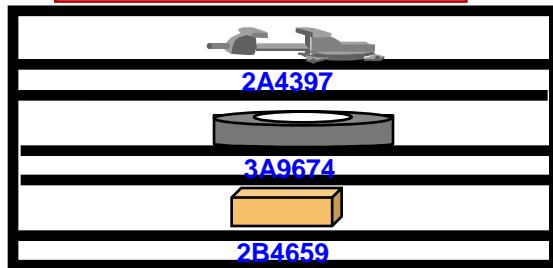
## DETERMINE LOCATION FOR NEEDED ITEMS



# Set To Order

## VISUAL LOCATIONS

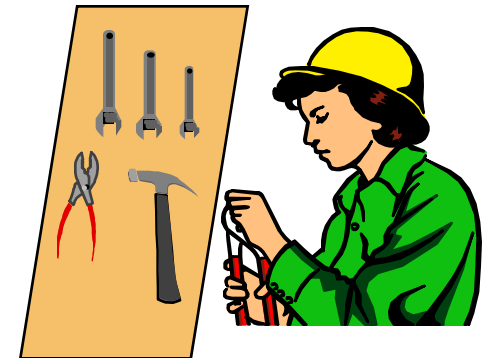
L2530 Laser Cover  
FIXTURES



## SAFETY ITEMS



## POINT OF USE STORAGE



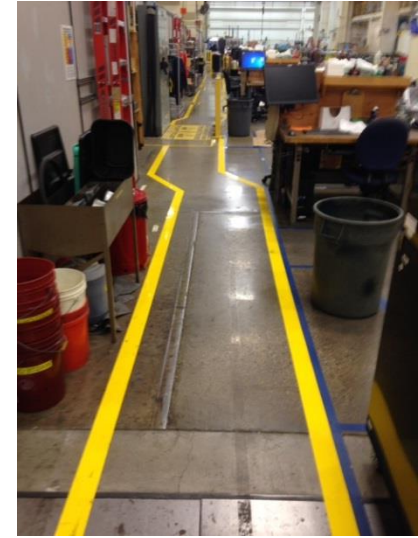
# Set to Order – Safety Item Examples



**Proper ladder storage  
& inspection**



**Clear Space Areas  
Designated and Maintained**



**Good Aisle Spacing  
and marking**



**Secondary Containment  
Use – bulk liquids**



**Good Chemical Storage**

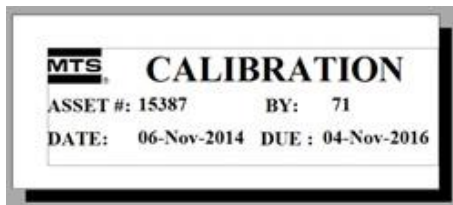


**Labeling of all secondary  
use containers**

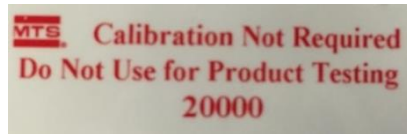
# Measurement and Test Equipment (M&TE) Controlled?

**Identify M&TE in area: If it measures it must have an MTS Metrology asset tag**

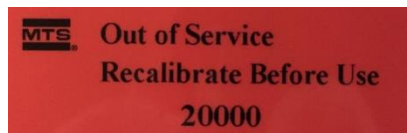
If calibration is required it must have a calibration sticker and the calibration due date must be in the future



If calibration is not required, it must have a “Calibration not required” sticker



If M&TE is out of Service, it must have a “Recalibrate before use sticker” and be segregated so it will not be used



**Please Contact the Metrology Lab for assistance**

# “One Point Lesson”

## Situation Before:

Toolbox totally disorganized with many unnecessary tools. There were three personal toolboxes like these.



## Solution:

Created 3 shadow boards for workstations. Eliminated 2 of 3 personal tool-boxes.



% Improvement: → Space  Inventory  Lead Time  Quality  Safety  Productivity

# Set to Order - Examples

---





# Shine

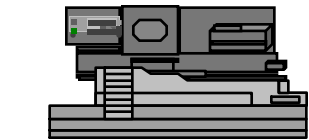
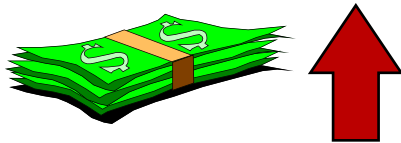


**BUILD PRIDE IN  
WORK AREAS**

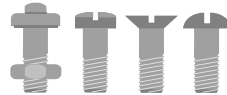
**SHINE**



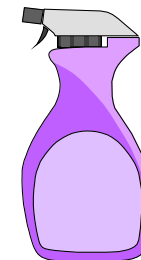
**ELIMINATE DIRT**



**BUILD VALUE  
IN EQUIPMENT**



**CLEANING AS A FORM  
OF INSPECTION**



**CLEAN**



**SWEEP**

# 94M Cell Activities: Cleaned Robodrill

**BEFORE**



# 94M Cell Activities: Cleaned Robodrill

**AFTER**



# Standardize

## PREVENTIVE:

- SORTING
- STRAIGHTENING
- CLEANLINESS

## ASK WHY

**STANDARDIZE**  
*A State*

## ASSIGN "3S" RESPONSIBILITIES

| NAME    | M | T | W | T | F | S | Su |
|---------|---|---|---|---|---|---|----|
| Ken     |   |   |   |   |   |   |    |
| Sonya   |   |   |   |   |   |   |    |
| Paul    |   |   |   |   |   |   |    |
| Ross    |   |   |   |   |   |   |    |
| Mell    |   |   |   |   |   |   |    |
| Cathy   |   |   |   |   |   |   |    |
| Jesse   |   |   |   |   |   |   |    |
| Roger   |   |   |   |   |   |   |    |
| Ken D.  |   |   |   |   |   |   |    |
| Douglas |   |   |   |   |   |   |    |

## CHECK ON "3S" MAINTENANCE LEVEL

| 5 Point Checklist |     |     |
|-------------------|-----|-----|
| 1. _____          | 2   | 3   |
| 2. _____          | 3   | 3   |
| 3. _____          | 2   | 2   |
| 4. _____          | 1   | 3   |
| 5. _____          | 4   | 4   |
|                   | 2.4 | 3.0 |

## INTEGRATE "3S" DUTIES INTO REGULAR WORK DUTIES

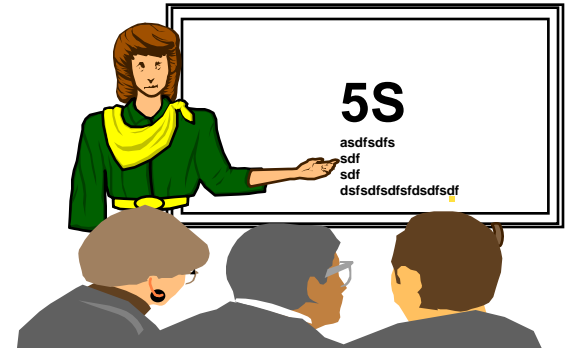
| 5 Minute 5S    |  |
|----------------|--|
| 7:30 - 7:35    |  |
| 1S organize    |  |
| 2S orderliness |  |
| 3S cleanliness |  |
| 4S standardize |  |
| 5S discipline  |  |

# Sustain

**MANAGERS COMMITTED  
TO 5S**



**PROPER  
TRAINING**



**SUSTAIN**

**CORRECT PROCEDURES  
BECOME A HABIT**



**“BUY-IN” FROM  
ALL WORKERS**



# Safety

**MANAGERS and EMPLOYEES COMMITTED  
TO SAFETY = Incorporated directly into the 5S review process**



**Good Housekeeping  
Practices- 5S**

**Electrical Cords**

**Flammables Storage**

**Emergency Equipment Access**

**Pipe labeling**

**Emergency Lighting**

**Secondary Labeling (containers, hazard rating, etc.)**

# MTS, Floor Tape - Color Reference with Grainger p/n

|     |  |                     |
|-----|--|---------------------|
| Red | Material that is on hold or non-conforming | Grainger P/N 15F743 |
|-----|--|---------------------|

|       |                                  |                     |
|-------|----------------------------------|---------------------|
| Green | Material at any level of process | Grainger P/N 15F745 |
|-------|----------------------------------|---------------------|

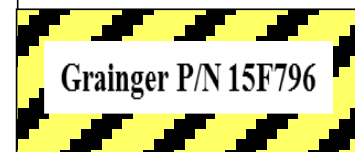
|       |               |                     |
|-------|---------------|---------------------|
| White | Drop off Area | Grainger P/N 15F794 |
|-------|---------------|---------------------|

|        |              |                     |
|--------|--------------|---------------------|
| Orange | Pick up Area | Grainger P/N 15F744 |
|--------|--------------|---------------------|

|      |   |                     |
|------|---|---------------------|
| Blue | Designated Location – Workstation etc.. | Grainger P/N 15F746 |
|------|---|---------------------|

|        |        |                     |
|--------|--------|---------------------|
| Yellow | Aisles | Grainger P/N 15F793 |
|--------|--------|---------------------|

|  |
|--|
| <b>Yellow/Black Strips</b> Fire extinguishers and eye wash stations, Combustible waste containers and flame proof cabinets, MCC's, Electrical and E –stops |
|--|



# MTS, Floor Cones - Color Reference with 5S designated area

---



Mobile 5S floor zones  
for System Assembly  
and Checkout – target  
High bay area initially





# General 5S Guidelines

- 5S is simply a process of Organization and Sustaining the organization
- Community/Shared cabinets or tool boxes need DETAILED organization and labeling
- Personal tool boxes and workstations need GENERAL organization and Labeling
- Things with wheels (except for chairs) usually require a designated location defined with floor tape.
- If it can be moved easily, it probably needs a designated location with floor tape and label
- A place for everything and everything in its place; every day
- Aisles are always clear

---

# **Auditing & Scoring 5S**

# 5S Assessment - Deep Dive

---

- Focuses specifically on 5S
- Provides a baseline to measure improvements against
- Identifies opportunities
  - Serves as a reminder of possibilities for improvements
  - Allows team to prioritize opportunities

# 5S Rating

---

**0 = Poor (*Unacceptable*)**

**20 = Marginal**

**40 = Satisfactory**

**60 = Good**

**80 = Excellent**

**100 = Operating Room Conditions  
(*World Class Environment*)**

# 5S Scorecard

## Workplace Organization Scorecard

Audit for the Week of: \_\_\_\_\_

Audited Area: \_\_\_\_\_



Audit Team: \_\_\_\_\_

Responsible Supervisor: \_\_\_\_\_

**Scoring Key** → 0 points = No application      3 points = Good level is partially implemented, needs to be pursued  
 1 point = Very little implementation      4 points = Very good, some progress needs done to maintain  
 2 points = Insufficient but encouraging start      5 points = Totally implemented and maintained, area can be used as a reference ← **Scoring Key**

### 5-S Principle

### Score - Higher is Better

### Comments - specific changes from previous

#### Sort

|   |  |   |   |   |   |   |   |  |
|---|--|---|---|---|---|---|---|--|
| 1 | All items not needed or required to perform the intended production function have been removed from the work area. | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 2 | Departmental Local red tag areas along with the Central and Asset storage areas are following set procedures.      | 0 | 1 | 2 | 3 | 4 | 5 |  |

#### Set in Order

|    |  |   |   |   |   |   |   |  |
|----|--|---|---|---|---|---|---|--|
| 3  | Every work area is clearly defined and labeled.  | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 4  | Items in the facility have a specific area where they reside and are clearly labeled as appropriate.   | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 5  | All items are in their designated area unless being used by the operator to manufacture product.   | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 6  | Aisles, pipes and walkways are clearly marked and can be identified at a glance; lines are straight and painted per Federal-Mogul paint color standards.   | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 7  | Walls, signs and boards contain only current information, arranged in a straight and neat manner. Torn or soiled material must be replaced or removed.   | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 8  | Clearly defined limits for raw materials and WIP are established for each production area. They are clearly visible and may not be exceeded.   | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 9  | Fire hoses, extinguishers, and other emergency equipment are unobstructed and stored in a prominent, easy-to-locate manner. Stop switches and breakers are clearly marked or color coded for visibility. | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 10 | Storage of boxes, containers and packed materials should be neat. Stacked items should not be crooked or in danger of toppling over.   | 0 | 1 | 2 | 3 | 4 | 5 |  |

#### Shine

|    |   |   |   |   |   |   |   |  |
|----|---|---|---|---|---|---|---|--|
| 11 | All floors are clean of debris, oil, and dirt. Cleaning of floors is done routinely.  | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 12 | Machines and equipment are kept clean by routine care and inspections; glass (windows) and work surfaces are kept clean.                                    | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 13 | All machines and equipment are painted per Federal-Mogul color specifications. There is no place in the facility less than 6 feet high that is not painted. | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 14 | Equipment leaks (oil, grease, water, etc...) are addressed and eliminated.  | 0 | 1 | 2 | 3 | 4 | 5 |  |

#### Standardized Clean-up (Note: A cleaning schedule can not be posted in an area that has not been through a 5S activity)

|    |   |   |   |   |   |   |   |  |
|----|---|---|---|---|---|---|---|--|
| 15 | Detailed cleaning work instructions are posted in each area.  | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 16 | A 5-S schedule is posted, detailing who is responsible for cleaning, what they should clean and when they should clean. | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 17 | A check list is filled out to ensure that assigned tasks are being completed.   | 0 | 1 | 2 | 3 | 4 | 5 |  |

#### Sustain (this category will be evaluated on a plant-wide basis by the management team)

|    |   |   |   |   |   |   |   |  |
|----|---|---|---|---|---|---|---|--|
| 18 | All safety and environmental processes and procedures are followed at all times.  | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 19 | A disciplined system of control and maintenance, assuring that each of the above items is maintained at the highest level possible, is visible. It is everyone's responsibility to maintain the system. | 0 | 1 | 2 | 3 | 4 | 5 |  |
| 20 | Audits are performed at least twice monthly. Previous scores are posted. Corrective actions or plans for corrective actions from each audit are documented before the next audit begins.                | 0 | 1 | 2 | 3 | 4 | 5 |  |

#### Total Score (Max 100)

Current Audit Score: \_\_\_\_\_ (Maximum Score = 100)

The audit is to be used to show areas that need improvement. Any of the 5-S principles that gets a score of 3 or less would indicate an area that should be focused on.

### Month-to-Month Audit Scores in This Area

| Dec-14 | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|        |     |     |     |     |     |     |     |     |     |     |     |     |

#### Corrective Actions:

| Item number | Responsible person | Completion date | Nature of problem |
|-------------|--------------------|-----------------|-------------------|
|             |                    |                 |                   |
|             |                    |                 |                   |