

The Seven Wastes

Waste #3:

Motion Waste

By Alan Pritchard

Editor's Note: This is the third article in a year-long series about how seven common types of waste in manufacturing can create unprofitable activity and how to address them in your plant.

Why do organizations focus on the seven wastes identified by Taichi Ohno, Toyota's chief engineer? The short answer is it's an excellent tool to use when identifying and evaluating how to improve basic processes.

When looking at motion waste, we are talking about the physical act of moving more than necessary. Furthermore, motion relates to time, and time waste benefits no one. So in order to eliminate motion waste, we need to identify the scale of movements and put more standards in place for reducing the waste.

WHAT IS MOTION AS A WASTE?

Motion waste is generally related to a person's movements, but it can also be unnecessary machine movement. Daily, our staff at Smith-Midland Corp. commits time to improve our processes, including cutting down

on waste. To benefit, we must make movement improvements that matter. It can be difficult for everyone to understand motion waste and how they can eliminate it.

Before getting into defining and classifying motion waste, we need to step back and ask ourselves what specific tasks are actually necessary. One type of waste is often related to or caused by another type of waste. The goal is to eliminate it and not to pigeonhole what type of waste it is.

One of the phrases that is often thrown around at our plant is "learning to see" the waste. If we don't see the waste, we will not be able to eliminate it.

IDENTIFYING WASTED MOTION

To help find motion waste, ask, "What (waste) is involved in one process?" If that doesn't help, narrow it down to a specific step of that process. This can be repeated by substituting any type of waste.

Motion waste can be as simple as walking to and from the production area, the yard, the fabrication area, the office, etc. It can be the act of composing internal emails or working on reports for your customer or management. Every step we take throughout the day has some type of motion element. While 80% of our motion may take place between the production shop and delivery of the product, those conditions may be a result of sales or billing processes.

Another way to help identify motion waste is to categorize the motion as either large or small.

Large motions take place when someone has to reach outside of a work zone. These are often easier to identify because they require larger blocks of effort and time. Common examples of large motions are looking for tools that are used in multiple locations, going to get a tool from a shadow board, taking welding rods back to dry in the oven, or walking beside the loads being handled on the overhead cranes.

Small motions occur within a constrained task area. These are often overlooked in precast plants because many of these are only done a few times a day, because they only take seconds to complete, or it is part of a small work group and insulated from management. Common examples of small motions are walking across or climbing over to the opposite side of a form, pulling a hammer out from a tool belt and flipping it over to orient the grip in your hand, or even using a bolt that is too long that requires extra turns to tighten.

We came up with a simple solution when trying to reduce small motions. When put into motion, they add up to a lot of time saved for production employees. Every day, one of our teams would come in to begin work on median barriers and utility structures. In order to get their tools, they would walk across the shop floor and an extra 100-plus feet around a casting bed for prestressed posts. Each time they needed something from the cabinet or needed to return an item, they either climbed over the bed or walked around it.

Lean tools to use for limiting MOTION WASTE include:

- ▶ 5S: sort, set, sweep, standardize, sustain
- ▶ Water strider or spider
- ▶ Milk runs
- ▶ Manufacturing enterprise systems
- ▶ Visual management

One solution offered by an outside observer was to build a set of steps to make it easier to climb over the bed. When the team looked at the situation more closely, they came up with a beautifully simple solution. The cabinet was relocated to the other side of the shop, closer to where the tools were actually used. The solution required minimal effort and no material cost. It was easier, safer, faster and cheaper, and hundreds of hours a year are being saved.

ASK QUESTIONS BEFORE GIVING SOLUTIONS

If you are looking for motion waste in someone else's work, you should know if they have a standard and whether they are following it. A process cannot be improved past its current level of stability. In other words, the deviation must be limited to an

acceptable level, and the products' quality must meet minimum standards.

Management has it tough because they must eliminate waste from their own work while supporting and coaching others on how to improve. They tend to see work as it is performed without recognizing the conditions that influenced and created the current method or situation. I strongly suggest you keep asking open questions about processes before offering solutions.

For instance, one motion that occurs regularly in a precast plant is creating reports on small process implementations and determining the return on investment. Often, it's better to just implement it and move on. We can sometimes be guilty of overthinking something which can waste time. If you know that it is going to net a positive return, there is little difference between recuperating costs

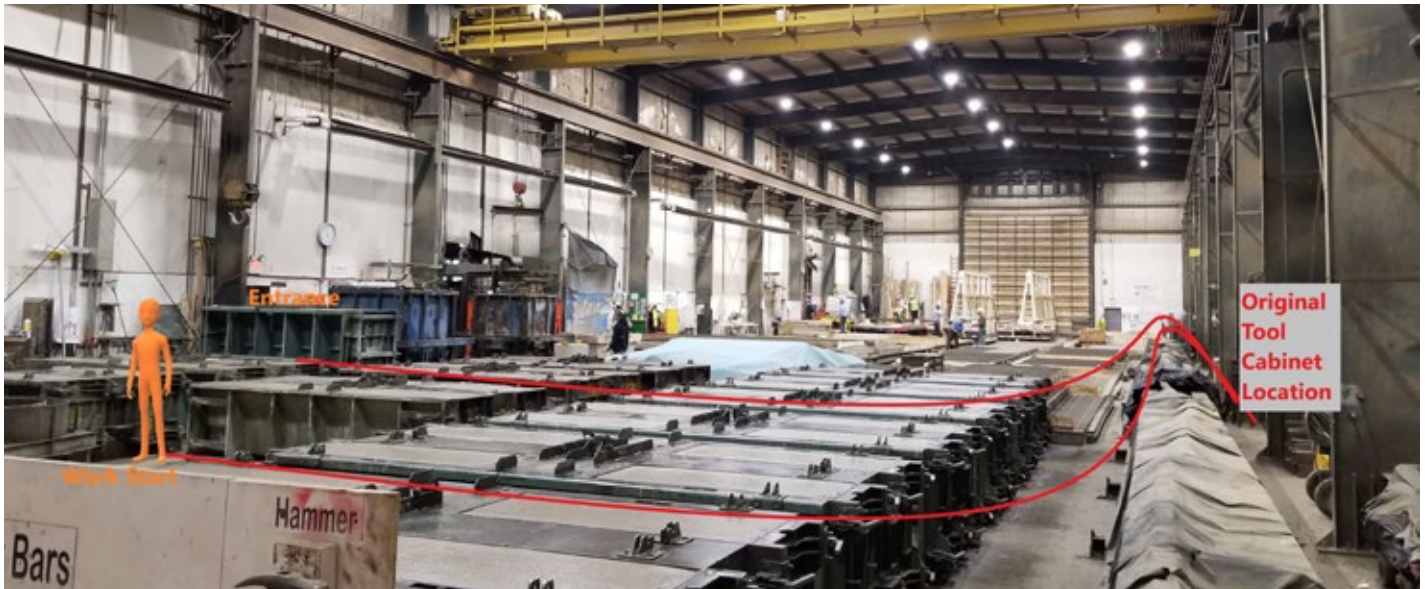
in two months instead of three months. The customer, company, employees and suppliers can then all benefit.

MAKE THE EFFORT TO REDUCE

Motion is a significant factor within the seven wastes and every effort should be made to remove it from your processes to both increase efficiencies as well as make work easier for all those involved. Movement is not work, but it costs you time and money. Look to lean tools to help you reduce and eliminate excessive motion from your processes. **PI**

Alan Pritchard is plant manager at Smith-Midland Corp. He is a 2016 Master Precaster graduate and a 2018 graduate of Leadership NPCA.

Below: The top photo shows an excess of motion discovered at Smith-Midland Corp. and the bottom example shows the solution.



Photos provided by Alan Pritchard