Naval Safety Center
LESSONS LEARNED
LL 22-04

AMPUTATIONS

Things you hope you never need to web search: "What to do if I cut off my finger."

Amputations are some of the most severe workplace injuries. They are not only traumatic and painful, but they are also costly in lost time, disabilities and dollars. No one wants to lose a body part, even partially; they all have an important purpose. The unfortunate reality is, according to a Naval Safety Center study, 93 mishaps resulted in an amputation between October 1, 2017 and July 31, 2021. Of those, 66% resulted in a permanent partial disability, totaling $25 million. An additional 24% resulted in one or more lost workdays. Studies alone won't prevent future mishaps, but they offer insights into how we injure ourselves and identify areas where we can take action to reduce injury risk. We won't throw a bunch of graphs at you (*OK, maybe just one*), but we will give a few real-world examples to bring the data to life.

The amputation-related mishaps in the study vary in causes, severity and type. While the number of incidents may not appear to be statistically significant, the numbers don't include lesser injuries like crushes, lacerations and bone breaks, which far outnumber amputations and can be equally painful and costly. This lesson learned aims to provide insights from the study for discussion with your teams (*and families*) about how you can prevent serious injury and keep all your original parts.

We mentioned the severity of amputation injuries, now, here's the breakdown of where they occurred. Shore/Ground had the most with 40 followed by ships with 24. Of note, off duty/rec also had 24, so keep that in mind while you're doing your home projects. Submarines had 3 and Aviation had 2.

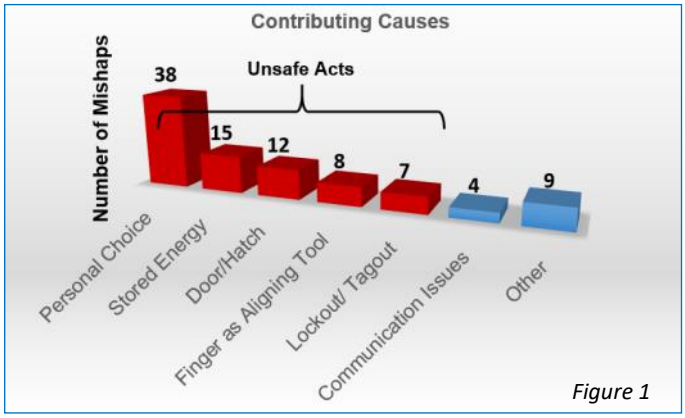

Figure 1

The most revealing insights from the study were the contributing causes (*Figure 1*). Not surprisingly, "Unsafe Acts" made up the top five. The "Personal Choice" category featured the highest number of mishaps at 38. This category included mishaps where the individual consciously choice to ignore safety protocols.

"Potential Energy" (energy of an object at rest) was the second leading cause of mishaps. This category included mishaps where gravity was a factor (i.e., an object fell, shifted, or moved onto a person's appendage leading to an amputation mishap). The "Door/Hatch" category came in third and included 13% of the total amputations during the study time frame.

Poor "Lock Out/Tag Out" (LO/TO) procedures was another cause with a lower, but still relevant, number of preventable mishaps. The LO/TO regulation is consistently one of the 10 most frequently cited standards at state and federal levels and was also complicit in seven Navy mishaps resulting in amputations.

While not a significantly high number compared to the first two categories, employees in the "Finger as Aligning Tool" category bear mention. This cringe-worthy and self-explanatory category accounted for enough mishaps to warrant its own classification. As promised, below are some examples to help drive our point home.

• A civilian ship fitter was going on his lunch break and decided to exit the scaffolding by lowering himself more than five feet to the deck instead of using the ladder. He held onto a rough-cut T-bar with one hand and let go as he lowered himself. A ring on his hand caught on the rough edge of the metal, amputating it on the way down. His poor choice of exiting the scaffold led to the emergency room and probably missing lunch. — *Safety tip: Jewelry and physical work environments, such as scaffolding or machinery, are not a safe combination. It's better to remove the jewelry than to remove a finger.*

• An employee was cutting material on a table saw. As he pushed the material using a guide fence, he also followed with his free hand, which was gloved, pushing the stock through the blade. The glove caught on the blade and severed the tip of his thumb. — *Proper PPE doesn't always include gloves, especially when near moving saw blades. Know when and when not to wear them.*

• An employee was cleaning the base pool facility in preparation for the opening season and opened windows and doors for ventilation. After opening one of the windows, the employee placed his hand on the bottom of the window frame. The window then suddenly slammed closed on his left index finger, severing it just below the fingernail. The investigation discovered that the safety catches on the sides of the window failed due to excessive corrosion. — *A better-maintained facility could've avoided this painful and life-changing mishap. We'll be keeping our fingers away from old window frames too.*

• A Marine had his fingers resting on the frame of a hatch when it was suddenly shut by another Marine who did not notice his fingers. The hatch severed the Marine's right middle finger. — *Frames of open hatches are not handholds, as this Marine found out the painfully hard way.*

• While re-installing ramp arms on a KC-130 aircraft, two service members placed their fingers into a hole to check for alignment. While the hydraulic system was off, the pressure bled down enough that the ramp settled downward, trapping both of their fingers. A third service member had to turn on the hydraulic pump and activate the ramp so they could remove their fingers, which were severed by the ramp arms. — *Anything would have been a better choice to check the alignment than fingers. We're sure that the maintenance procedure didn't call for the use of a finger.*

Key takeaways / Lessons Learned

This lesson learned is less about amputations and more about the personal choices and practices that lead to them. We prefer you avoid any type of personal injury by using sound judgment and following safety protocols at work and home. The study includes more examples and data on amputations and is located on our CAC-enabled website, https://intelshare.intelink.gov/sites/nsc/ under historical studies in Topics/KMSP/Code: All. If your time is short, here are a few takeaways.

1. **Keep your appendages inside the ride**. First and most obviously, watch where you put your hands. Situational awareness and a little forethought about the potential consequences of your choices on the job will go a long way toward staying safe and keeping all your digits.

2. **Fingers are not alignment tools**. There are many readily available finger-like tools to use for alignments. Try the pin or bolt that's intended for the hole, for starters. In some cases, there are even special tools for the job. And they are much less painful if they break.

3. **Maintain a safe workplace.** Faulty stops and missing machinery guards are asking for a mishap. Safety assessments and inspections should be the norm at your unit, not a rarity. Supervisors, you owe it to your crews to make sure you provide a safe environment.

4. **Remove the rings.** Your ring may be important, but you can't wear it without a finger. Consider taking it off when you are working in an environment that can "de-glove" you. Think about it!

And remember, "Let's be careful out there."