SAFETY

FOOD FOR THOUGHT:
PSM-RMP Lessons from the Trail

by William Lape

My wife and I spent several days last Summer hiking around Mount Hood. At first glance, there isn’t much in that activity that relates to Process Safety Management. However, upon further reflection, begun while taking in the awe-inspiring views along the ridgeline of one of the glacial stream canyons, there are some significant parallels.

What has this to do with PSM, you ask? Well, it starts with an assessment of our Training Program and capabilities. Neither of us have a lot of hiking experience, especially in an area like the Mt. Hood National Forest (We don’t have any mountains of that stature in Minnesota). So, we needed to establish the limits of what we could do, much as you need to do with your Ammonia Refrigeration Operators. Questions pertaining to our knowledge of the proper way to ford a fast-moving glacial stream translate into those of “Does Joe know how to properly isolate and pump down a portion of the system?” or “Does Bob know how to safely drain oil?” and “Do either of them know how and when to use their ammonia PPE?”

Additionally, neither of us are professional athletes with chiseled physiques and boundless stamina. This means that we need to conduct a further review of the hazards to be encountered and our physical ability to handle them. That started at the cabin table where we conducted a Hazard Assessment using the Forest Service trail guides to decide upon a route for each day. The trails that looked interesting were sorted according to difficulty, then further sub-divided according to length and elevation change. A trail that was rated as most difficult may not have been outside the realm of possibility for us, but only if it was of short length. Terrain was another factor. Hiking on volcanic scree at 7000 ft does not have a minimal impact on one’s knees and ours aren’t the best. When you sit down to conduct your PHA, do you take into account human factors that could put your personnel and facility at risk? How many of your operators can pass a medical exam for respirator use? Do any of them have restrictions that limit their ability to respond to incidents? We must be able to accommodate these restrictions and the only way to do so is to have an honest accounting of what situations might arise and how to keep them and their co-workers safe. “Does an employee need to climb a ladder to reach critical valves? Do all of your employees have the physical ability to do so?” These abilities change over time, so it is critical that particular attention is paid to the human factors section of your PHA during each revalidation.

After determining the routes that looked promising, we evaluated our equipment. We did not intend to camp overnight, but wanted to be prepared for emergencies. A flashlight, compass, map, multi-tool, fire starter, ponchos and emergency blankets went into the backpack, along with additional
layers of clothes, some food, and water purification tablets to supplement the water that we were taking. The flashlight was checked to make sure that its batteries were fresh. The declination adjustment was checked on the compass to ensure a true North reading. From a PSM standpoint, do you have proper PPE for your operators based on your defined responses to leaks? When was the last time that it was inspected and tested? Are your respirator cartridges out of date? Have your personal ammonia sensors been calibrated at the proper interval? Do you bump test them before each use? Do you have personal ammonia sensors for each person investigating leaks, or just one? How about tools? Do any of your operators use a pair of channel locks on seal cap valves because they long ago lost their refrigeration wrench? What about hoses? Are your operators using a simple rubber hose to drain oil, or one that is rated for ammonia? If the hose is rated for ammonia, is it out of date? Has it been inspected AND tested per manufacturer’s recommendations?

The final parallel that I want to mention today is that as we were hiking the chosen trails, we were constantly reevaluating conditions. Was a storm moving in (thankfully, no)? Was the incline more than we anticipated? How were we holding up physically (We did pack some sunblock and boy, did we need it). You and your employees need to do this sort of re-assessment any time that you are working with the system or addressing leaks. Has an unforeseen circumstance occurred? For example, when pumping down a valve train after isolating it, have you ever discovered that an isolation valve was not holding? When investigating a leak, has your sensor ever indicated that ammonia levels were above the limits of your respirator?

The key to all of this is that we must always do our best to work, and play, safely within the capabilities of both our bodies and our equipment. As such, our Process Safety Management programs must be sure to include these considerations within the Process Hazard Analysis, the operating and maintenance procedures, the training program, and within the Emergency Plan.

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