

Ziplines, Challenge Courses, and Aerial Adventure Parks – In the Shadow of COVID 19

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As a builder and operator of numerous small businesses that have interactive services with the general public, the latest events affecting the world public health today of the COVID-19 pandemic, state issued shelter-at-home orders, transmission of the virus, and other factors, are at the forefront of my concerns. Questions circulate in my mind about public health, how to protect my family, employees and guests, how to disinfect or “sanitize” our personal fall protection equipment, the costs associated with those efforts from products to labor costs, or even will we be allowed to operate our business in general. These are strange times and let’s face it, we are a customer service industry and customers don’t need our services; we are a choice. If our clients make the choice they don’t need our services, then my businesses and yours may not survive....at least not like business of yester year.

Moving into a new world of business, changing practices emerge every week, day, or even hour! Close your business, not close your business? Wait it out? Wait for treatments or vaccines? Wait for testing? These are all passive options that rely on time or someone else to tell us what to do. I call this the “sheep” protocol. This is an older reference to herding sheep, whereas they don’t herd themselves, they follow something else. Typically, shepherders have a black goat or dog and the rest of the sheep follow that leader. So, who will be our black goat/dog that we will follow? The World Health Organization (WHO), Centers for Disease Control and Prevention (CDC), Environmental Protection Agency (EPA), United States government recommendations from the White House COVID 19 Task Force, the manufacturer's recommendations of the product we utilize, our individual states or Governors recommendations, or the Professional Ropes Course Association (PRCA), other like associations? The options and permeations become mind boggling. For some, this article may be the answer but I sure hope not!

For me, when in doubt, follow common sense and do your own homework! It could be argued that you have multiple issues to address. Below are a few suggested items to examine in light of business protocols and operation, or not, during the COVID-19 pandemic.

1. Define problem related to our industry specifically and your program;
2. Methods and Mitigation;
3. Legal liability & considerations;
4. Insurance considerations & exposure;
5. Employee verse client safety expectations;
6. Programmatic behaviors and changes;
7. Practicality of measures, costs, time, etc;

1. Define problem related to our industry specifically and your program;

As we examine the adventure outdoor industry, this article will relate more specifically to the Ropes Challenge Course, Zipline, and Aerial Adventure Parks sectors. For these program areas, we need to examine points of human interaction, by which will define our contamination points. Counter tops, door knobs, 6 foot or greater distancing recommendations, bathroom sinks, toilet flush knobs, food service trays and utensils, refrigerator and other devices with handles are the more common sense items. But digging deeper, we need to look at carabiners, pulleys, wire rope, helmets, belay devices, and other "hard goods" contact points. We also must examine "soft goods" such as our safety ropes, webbing or rope lanyards, and harnesses, for examples. Once points of contamination are identified, begin the process of creating mitigation and disinfecting plans that are appropriate for your agency program and procedures.

2. Methods and Mitigation;

As we look at methods to "disinfect" or "sanitize" our points of contact areas, not one method is going to be universal for all points of contacts. We must also keep in mind that viruses (e.g. COVID- 19 which prompted this article) survive for different lengths of time on different types of surfaces. Some items may not even be worth addressing. For example, if a person that is positive with a contaminating virus coughs or touches tree bark on a zipline tour or aerial adventure park element, do we need to disinfect that area or will the virus die on the surface and not be transmittable? If we disinfect the tree bark, will we cause harm to the tree causing us to lose the infrastructure of our business? These are wild and crazy questions to ask, but they need to be asked, none the less.

From my limited research, some one hundred hours over the past few weeks, making phone calls, reviewing websites, and reading article, after article, after article, some common practices seem to be emerging. None appear to be a silver bullet, but it does allow one to begin the process of evaluation between risk and reward as a business.

“Hard Goods” point of contact contamination-

This area seems to be the most clear. What are a “Hard Goods”? They may simply be defined and solid items, surfaces, and structures. For purposes of an adventure program, examples may be pulleys, carabiners, belay devices, helmet shells, harness buckles, outsides of boxes or containers such as automatic defibrillator, fire extinguishers, first aid kits, storage bins, or the like. Cleaning with disinfecting wipes, alcohol (70% Isopropyl most common), mild diluted bleach solution of 10%, disinfecting wipes, etc. all appear to do the trick without any adverse effect on the products themselves. Further, residual agents of the product may be easily wiped off as to prevent becoming a medium to collect dirt later on during usage. Be sure to allow for complete drying and avoid cross contamination with soft goods such as webbing and rope products.

“Soft Goods” point of contact contamination-

This area seems to cause the most concern and confusion. As many of the “Soft Goods” relate to harnesses, lanyards, ropes, and other fall protection equipment, these items don’t have a clear answer, universal to all other “Soft Goods.” Disinfecting this type of equipment should follow the manufacture recommendations, yet some of the manufacture recommendations can be labor intensive or not practical. For example, Petzl (April 17, 2020) [1] recommends soap and washing, “1) Respect a 72 hour quarantine period, 2) Hand wash products with soap and water, at a maximum temperature of 65°C (Warning: these are exceptional measures during the COVID-19 crisis. Otherwise, under normal circumstances, please wash your equipment at 30°C as indicated in the technical notice)[Petzl, April 17, 2020]. It is unclear from the notice if the 72 hour quarantine period is before it is safe for you to wash the harness or how long after washing you need to allow it to dry? Drying soft goods is another tricky matter.. Most common practice is to hang in a secure, cool, dry shaded area, with plenty of ventilation. Avoid direct sunlight (UV radiation issues) and do not place in a dryer. Please note the Petzl notice refers to “products” so this should be good for lanyards and harness soft goods. Disclaimer, Petzl refers you back to each of their products technical bulletins on the matter as well.

Robertson Harness recommends similar actions general cleaning and disinfecting with soap products, NOT detergents, drum or hand wash with gentle agitation, rinsing thoroughly with cold water and allowing for a day to dry, depending on humidity; never in direct sunlight, use of dryers, or heat guns. [2] Robertson Harness also references their approved use of Sporicidin. [3], [16] In conversation with Cody Greene of Robertson, he recommended using a sponge and wiping down the possibly contaminated areas of your webbing products.

Before I go down this rabbit hole, I need to go reference another rabbit hole not reviewed as part of this article. The type of nylon used in our brand harnesses and lanyards may not all be the same type. Therefore the recommendations presented in this article may or may not be appropriate for your specific webbing equipment. On average, as with Robertson

Harness, they manufacture webbing products from Nylon 6.[4] Utilizing Nylon 6 was my product of research. For sake of this article, other webbing types were NOT researched.

In a "Chemical Compatibility Reference Chart" [5] provided by Robertson Harness, we can determine different chemical effects on Nylon 6 products. Sporicidin has an active ingredient of Phenol 1.56% (rated D – Severe Damage at Phenol 10%) and Sodium Phenate .06% and Other Ingredients 98.38% [6] Other cleaners such as Lifeline [7] may be used for washing fall protection "soft goods and claims " this exceptional cleaner concentrate was formulated to thoroughly clean petroleum, animal and vegetable based oils, fats, grease and the types of soils encountered in the fire industry. It is biodegradable to U.S. Standards, nontoxic, non-acidic, non-alkali, non-flammable and gentle to the skin. LifeLine cleaner may be combined with bleach or fabric softener. When used properly, it will not leave grease or residue in your washer. Highly concentrated, it must be diluted." [8] Interestingly, while it claims to be biodegradable and nontoxic, it does carry a safety notice – "**WARNING Cancer and Reproductive Harm** – www.P65Warnings.ca.gov [9] It also must be pointed out that LifeLine may be used with bleach, this conflicts with Robertson Harness recommendations[10] . When we look at the active ingredients of bleach[11], we find Sodium Hypochlorite which rates D- Severe Damage on the Chemical Compatibility Reference Chart. This may not be the active ingredient in all bleaching type agents.

In review of the Robertson Harness recommendation, this may appear to make the most practical sense when implementation. By using a sponge to wipe down the outside of the possibly contaminated areas of webbing, you are avoiding a complete saturation of the webbing. This should help minimize employee labor, decrease drying times, and be most economical for your programs budgets. While Sporicidin is recommended by Robertson Harness for use on their products, we must be reminded it rates D – Severe Damage to Nylon 6 on the Chemical Compatibility Reference Chart regarding for the active ingredient of Phenol at 10%. The Phenol concentration in Sporicidin is 1.56%. Would this must lower percentage of active ingredient be significant? This isn't to say that damage over time won't occur, but it could be hypothesized it will cause damage at a slower and more acceptable rate, suggesting that the gear being retired by wear and tear issues may occur be significant loss of strength due to degradation by the Sporicidin product itself. Further testing is recommended.

Alcohol based sanitizers such as Purell Advanced Hand Sanitizer Naturals with Plant Based Alcohol [12] "*kills 99.99% of most common germs that may cause illness." [13] This product has an active ingredient of Ethyl Alcohol which on the Chemical Compatibility Reference Chart [14] rates A- Excellent, yet also contains Inactive ingredients such as Isopropyl Alcohol which rates D- Severe Damage [15].

You may want to explore alcohol free hand sanitizers. In an article published by TheConversion.com entitled, "Coronavirus: not all hand sanitizers work against it – here's what you should use", they state, "Alcohol-free hand sanitizers contain something called quaternary ammonium compounds (usually benzalkonium chloride) instead of alcohol. These can reduce microbes but are less effective than alcohol. Not only are alcohol-based hand sanitizers found to be effective at killing many types of bacteria, including MRSA and *E coli*, they're also effective

against many viruses, including the influenza A virus, rhinovirus, hepatitis A virus, HIV, and Middle East respiratory syndrome coronavirus (MERS-CoV).” [16] A quick review of the Chemical Compatibility Reference Chart reveals these ingredients are not listed. [17]

Interestingly, the EPA issued a news release on March 3, 2020 [18] expanding its approved disinfectant list and states, “While disinfectant products on this list have not been tested specifically against SARS-CoV-2, the cause of COVID-19, they are expected to be effective against SARS-CoV-2 because they have been tested and proven effective on either a harder-to-kill virus or against another human coronavirus similar to SARS-CoV-2.” [18] Following the link to the new expanded approved disinfecting list [19]. A search for Sporicidin yields positive results as being added to the list as recent as approved. [20]

While still falling down this rabbit hole further, it is becoming clear that the direct answers for killing viruses, such as COVID-19, may and most likely will damage your Nylon 6 products in some fashion or another, reducing the service life of the product. Further, daily washing and drying of Nylon 6 products increase wear and tear, also reducing service life, and perhaps become impractical from a labor perspective. Another issue to consider is having enough equipment on hand to rotate in and out of program while some soft goods are being washed, drying, or in service. From a sense of humor perspective, I’m not sure if beer will kill viruses, but on the Chemical Compatibility Reference Chart, it rates an A – Excellent. [21] You may need a beer right about now, in this reading.

Another method of sterilization and disinfecting is the exposure to Ultraviolet radiation (UV rays). Again, like soaps and chemicals, they have a detrimental effect on webbing. Therefore, storing your equipment outdoors in direct sunlight or the use of UV lights for a set determined length of time are not recommended. [1], [3] My thirty-five plus years of direct industry experience also recalls seeing and hearing this information from multiple other sources as well to include vendors, rope manufacturers, and lanyard manufacturers. Validating this knowledge, we find during a Google search term “nylon 6 webbing UV rays” we yield DutchWareGear.com. Here it states, “Nylon is fairly resistant to UV degradation and as long as it isn’t left exposed to the sun for months, you will not see much more than 30% loss of strength of Nylon 6 and nylon 6,6.” [22] This is contrary to my collective experience, or is it? 30% loss of strength appears significant to me, so perhaps my many years of training are correct? Oddly, this conventional wisdom is challenged by a study produced by International Technical Rescue Symposium, “An Empirical Analysis and Theoretical Model of Ultraviolet Exposure on Webbing” [23] In a study of leaving webbing exposed for a six month period from December 3, 2016 through June 3, 2017. “We found a 16 percent reduction in breaking strength when compared to webbing from the same spool that was stored indoors for the same duration of time. This reduction in strength is due to a combination of factors, including degradation due to solar radiation, precipitation, and freezing temperatures. However, we consider the main contributor to the reduction in strength was the amount of solar radiation that the webbing was exposed to.” [24] So ultimately, is 16% significant? The answer is perhaps both yes and no at the same time. If your webbing rated tensile strength is 6,000 lbs., as is the Robertson Harness Nylon 6 webbing used to manufacture harnesses and lanyards when new, [25], a 16% degradation of strength yields a suggested remaining strength of 5,040 pounds, still

meeting the ANSI/PRCA American National Safety Standard, March 3, 2014. [26] While this references direct exposure over a consistent period verses daily use of limited hours per day, a comparison is antidotal at best. As in my experience, we are failing webbing products within a year or two mostly due to wear and tear issues, generated from higher use cycles of the equipment. Whether or not this information has any relationship to the use of UV lamps in a gear shed to sterilize webbing products is unknown. Temperature, air circulation, humidity, output intensity, distance from product, and proper product rotation, are all variables in UV light effectiveness or degrading.

After chemical treatment and UV treatments, comes a third method of heat treatment. Heat treatment may be that of dry heat, steam cleaning, boiling, Autoclaves, or other means to generate enough heat to kill viruses, such as COVID-19. According to an online article by Southern Morning China Post suggests that normal high temperature in water of 140 degree Fahrenheit may not be enough to kill COVID-19. [27] In fact, they needed to bring the temperature up to almost boiling point since standard acceptable protocols of soaking in hot water of 140 degree Fahrenheit for an hour didn't kill all strains. "Professor Remi Charrel and colleagues at the Aix-Marseille University in southern France heated the virus that causes Covid-19 to 60 degrees Celsius (140 Fahrenheit) for an hour and found that some strains were still able to replicate. The scientists had to bring the temperature to almost boiling point to kill the virus completely, according to their non-peer-reviewed paper released on bioRxiv.org on Saturday. The results have implications for the safety of lab technicians working with the virus." [28] With Nylon 6 having a melting point of about 417 – 506 degrees Fahrenheit relative to being Nylon 6 or Nylon 6/6. [29],[30], [31] [32] While the boiling point of water is 212 degrees Fahrenheit, well below the melting point of Nylon 6, let's just presume that our programs doing have a large enough pot to place all our webbing Nylon 6 harnesses and lanyards into, fill with water, bring to a boil, then let cool, drain, and air dry for 1-3 days. Maybe it's just me, but this doesn't appear practical for our industry's application. Or is it? Today's modern handheld water vapor steamers can generate steam vapors up to nearly 300 degrees Fahrenheit. [33] Yet again, how practical would a held steamer be in the sanitizing say 1 harness, 10 harnesses, 100 harnesses or following the same math for safety lanyards? To say nothing about the hazards to employees who could suffer severe burns by scalding water vapors. Please note, that for the purposes of this article, "flash heating" of Nylon 6 or water pounds per square inch (psi) were not researched and may also have a degrading effect on Nylon 6.

Another possible sanitizing method of Nylon 6 may be Ozone-gas treatments. Information on this type of sanitizing becomes more scarce on the internet or requires payments for articles. At this point of this article, ozone treatment was not further researched. Yet if you are feeling motivated and wish to know more, please don't let this article stop you from further research.

3) Legal considerations & liability;

Research surrounding legal liabilities is another concern when looking to operate a program in the near future. Let me point out that I am no legal expert and have no certifications in these matters. However, after consulting with an attorney regarding my own programs, exposure is not so clear or as clear as one might think. Variables to consider are that each state looks to be conducting their own re-opening procedures for business and normal travel. Second, laws in each state can differ greatly around tort protections for outfitters, programs, not-for-profits, for profits businesses, etc. **YOU NEED TO CONSULT AN ATTORNEY LICENSED IN THE STATE YOU ARE OPERATING ON THIS MATTER.** Simply updating your waiver to include a tag line about Coronavirus, COVID 19, etc, may not be enough. For example, have you created or define a new mitigation protocol for sanitizing equipment, programs areas, social distancing requirements, trained your employees in these new operating procedures, and documented both the procedures and evidence of employee training of the new process? To do absolutely nothing and reopen your course, should someone become infected and test positive for COVID-19 and prove factually they were contaminated at your program, not only could a suit be brought for negligence, but perhaps “gross” negligence, which increases exposure to higher limits of settlement or penalties. Civil actions may even come into play.

To do “something” about attempting to mitigate exposure should help reduce issues of possible “gross” negligence as you attempted something to lower or eliminate the risk of transfer at possible contamination points. Keep in mind that the usual “standard of care” practices may not apply as no one has ever had to deal with issues such as this before in modern history. The optics of what is new an undefined standard of care will be more subjective than ever.

Exploring the legal differences or requirements you have towards the general public and your employees may also be different. As an employer, the expectation of care for your employees may carry a higher level of importance. Workers Compensation (WC) insurance should be explored. The use of 1099 Independent Contractors should be explored in regards to their mitigation procedures or adhering to your programs procedures. What types of Personal Protective Equipment (PPE) might be expected to have your employees wear and who pays for the PPE equipment? For the sake of this article, we will leave it the strongest recommendation for you to seek out and retain professional counsel in your state on this matter.

4) Insurance considerations & exposure;

Having the proper insurance in place is a critical component in these changing times. General Liability exposure to COVID-19 at your program, shuttered operations and Business Interruption coverage, hazard clean-up coverage should one of your clients or employees contaminate other area businesses and you are forced to cover their damages or losses? This could be a liability exposure area if you lease or share common areas with other business in close proximity to yours. For the purposes of this article, I am not a license insurance agent. I strongly recommend you get in touch with a trusted agent, licensed for your

state of operation(s). Ask purposeful questions, which you have written down in advance of your meeting with an appropriate agent. Get the full policy up front, before you secure coverage and read the policy, cover to cover. You will also want to explore your agents Errors & Omissions policy should you have a claim and the policy they sold you doesn't cover you loss as designed. You'd be surprised on the back side at how fast fingers start getting pointed around the table, with the finger perhaps on you with blame that "you weren't specific enough in your request" or worse yet, you never asked for that type of coverage. Get everything in writing. Ask all your questions in writing. Document the responses and leave no stone unturned in their written answers in return. While they are professionals, the insurance agencies are a business, and they want to pay out as few claims as possible. That means they may be prepared to pay six figures in legal fees, just on principle or to protect low end settlement at ten cents on the dollar. Logic and reason will be gone and you will need to be able to "prove" coverage, what questions you asked, and what answers you received. Be warned, be prepared, be ready!

5) Employee verse client safety expectations;

As mentioned prior in this article, the new "standard of care" for the industry has not yet been developed. Operating your program, no matter how well you mitigate expose, clean surfaces, and minimize the risks, could do you little to no good if you operate by violating a state authorized closure order, such as "shelter at home."

Clients may come and clients may go, but your employees often are more than just people; they are your friends, family, and extended families. We operate in a close knit environment, oftentimes putting our lives in the hands of others via belay practices, trust, confidence, and emotional support. But where are the lines? At what point can you no longer expect your staff to attend work? If they refuse, they have every right to refuse work if they perceive their health may be in danger, especially if there is a "shelter at home" 'recommendation. See that word, 'recommendation?' It's not a mandate. But as the employer, you may want to take the risk and go into work, but do you have a legal right to demand your employees do the same? Check with your attorney. Is your state is a "right to work" state or not? This can become yet another deep rabbit hole to go down.

For the sake of argument, you do open up and operate tours. Your employees happily come to work. Is there anything you need to provide them for Personal Protective Equipment (PPE)? Many would argue "YES!" Providing hand sanitizer, face masks (homemade, store purchase basic or N95 certified), gloves, extra time for group preparations, protecting face shields, or gowns all may be possibilities? Other things to consider are extra expenses for laundry fees, soaps, and disinfectants for their homes. Laundry fees if they don't have a washing machine and dryer at their residence. Have the conversations with your employees up front so everyone has clear expectations. Perhaps even in 30 days we will be past this COVID-19 crisis and this article may be useless; let's hope.

Let's turn focus to the clients. What PPE equipment are you prepared to provide them? Or do you mandate they arrive with their own PPE items? And if they arrive without PPE items, do you provide or allow them to participate without PPE items? If your answer is 'yes' you allow them to participate without PPE items, then how will you handle refunds from other group members who now decide last minute not to participate with others around not utilizing PPE items? How will you handle refunds for clients who agree to arrive with certain PPE items and if they don't and you refuse service, then they demand a refund. Do you provide the refund or not since they didn't hold up their side of the agreement to arrive without pre-approved PPE items? Again, another rabbit hole if you don't have your policies and standard of care clearly written out and available to guests BEFORE then sign up for a tour.

6) Programmatic behaviors and changes;

By this point in the article, we have covered many items in other sections that would be addressed in this section as well. Cleaning practices, sanitization of hard surfaces, sanitation of fall protection equipment, PPE items made available to employees or clients, revisit your cancellation policies, limit tour size, reduce overall company capacity, practices, PPE equipment, masks, temperature checks, updated waivers, group size limitations, sanitation measures, trash removal, etc. It's easy to say that the new normal operating practices for our industry will put us all in uncharted areas for the immediate future and perhaps upwards of the next 18 months. Changes will need to be defined and placed in writing for employees to follow. Through training and documentation of training will need to be conducted. A clear exit strategy as to when these new polices expire should also be addressed and on what trigger measures from government authorities.

7) Practicality of measures, costs, time, etc;

Managing all this new information, risks assessments, costs, liability exposures, new policy and operating procedures, employee protections, and plain "fear of the unknown", may or may not even make it practical for you to operate your business this season; exploring sometime in the future as to when you could logically reopen. For some, that may be as soon as the states reopen travel and lift business restrictions. For others, it may mean when a viable treatment is in place. Others may want to wait until there is a vaccine. Regretfully for others, the damage is too overwhelming and they have already chosen to close their doors forever. Every program will have different optics and outcomes. We can only hope that we put the current COVID-19 pandemic behind us as quickly as possible and minimize the further interruption to our businesses and industry as a whole.

Conclusion;

The new standard of care defined appropriate for your program could vary widely from that of another program. Caution should be exercised to avoid following any “blanket statements” without the manufactures approval and due diligence on the readers part. It is the hope that this article has provided some critical information to be considered in your deliberations, policies and procedures, and implementation at your programs. Be thoughtful, purposeful, and mitigate the risks as appropriate in balance with your budget constraints. To do nothing is not recommend. Being proactive and doing something constructive should help your program come out of the shadow.

Disclaimer;

As pointed out in this article, the author makes no claim of being a licensed attorney or insurance agent. It is strongly recommended you consult a properly license professional in your state and jurisdiction. The current government regulations and recommendations surrounding the COVID-19 pandemic are changing daily and even hourly in some cases. It is the responsibility of the reader to conduct their own due diligence, seek out proper consultation, and implement practices appropriate with their programs.

About the Author:

Steve Gustafson has been a leader in the adventure industry since 1986. He secured his Associates, Bachelors, and Masters’ degrees in Recreation, Parks, and Tourism, from Western Illinois University, with emphasis in Adventure Education and Geology. He later was awarded the WIU RPTA Distinguished Alumni Award for his business accomplishments and service. Over the years, he has seen employment within the private sector and not-for-profit sectors, including The Boys and Girls Club, a private YMCA camp, Cradlerock Outdoor Network (a challenge course vendor and founding company of a large industry association), and formed Experience Based Learning, Inc. (EBL) in late 1996 - present. EBL is a corporate team building, ropes challenge course, zipline tour, and aerial adventure course installer, inspector, operator, and trainer with endorsements from Massachusetts, Illinois, and Idaho. He has served on the Board of Trustees with the Wilderness Education Association where he won the Frank Lupton Service award for his efforts. He has had numerous papers published and has been cited in numerous others, along with serving as expert witness in industry disputes. In 2003, he co-founded the Professional Roes Course Association (PRCA). He later spearheaded the efforts of gaining the industry’s first American National Standard Institute (ANSI) Accredited Standards Developer (ASD) status for the PRCA. This in turn led to the industry’s first ANSI American National Standard with the highest designation of American National Safety Standard, which to date, no other industry association has reached this highest level of standard. He has served as President of the Board of Directors from 2003-2016, VP in 2018-2019, and now PRCA President in 2020. In business, he has opened and operated over twelve other businesses in the industry and first to install a commercially marketed zip line tour and aerial adventure park in the United

States. He has even had time to provide voluntary service to ROTARY, teach academic courses at Purdue University and Beloit College in adventure education and entrepreneur studies. Today, Mr. Gustafson serves as host of the industry's first and only Reality TV Show, Zip Away! He furthers his off time hobbies in dog breeding, commercial drone flights, and television production, along with executive producer of the shows commercial soundtrack.

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