



Recommendations COVID-19

Ver. 1.3 - 14/04/2020

PREMISES

- ▶ This document presents a series of recommendations and suggestions to reduce the risk of viral contagion (in particular from COVID-19) within the adventure parks, considering the specificities of the environment and the average organization spaces
- ▶ Here are presented general measures and possible solutions, which may be adapted and personalised to match the environmental conditions and logistics of each adventure park
- ▶ Each of the presented guidelines contributes, in our opinion, to reducing the overall transmission risks for COVID-19 virus during the adventure park experience, adopting a probabilistic approach. Each manager will be in charge of adopting the most adequate and economically sustainable measures, throughout a specific risk estimation and considering that adopting several measures in the same area contributes to the overall reduction of the risks in a more efficient way
- ▶ The content of the document reflects the scientific knowledge on the COVID-19 virus to the date of production of the document: whenever new information will be available, the Association will publish said amendments. In particular, this is referring to the current O.M.S. and Health Ministry* recommendations
- ▶ This excludes potential requirements and obligations introduced following the date of this document by the relevant authorities, even on a regional scale

*The Executive Council
of the Italian Adventure Parks Association*

* see Documented References

DOCUMENTED REFERENCES

► Health Ministry

- Modes of transmission
<http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioFaqNuovoCoronavirus.jsp?lingua=italiano&id=228#3>
- Surfaces and hygiene
<http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioFaqNuovoCoronavirus.jsp?lingua=italiano&id=228#4>

► World Health Organization (WHO)

- Recommendations for the public
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>
- Technical guidelines to organize mass gatherings
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/points-of-entry-and-mass-gatherings>
- Risk assessments to organize mass gatherings
<https://www.who.int/publications-detail/how-to-use-who-risk-assessment-and-mitigation-checklist-for-mass-gatherings-in-the-context-of-covid-19>

GENERAL INDICATIONS

- ▶ Keep **informed** on the epidemic situation and on the containment measures communicated via the official channels (eg: Government website)
- ▶ Perform a thorough **contagion risk assesment** for your facility, to identify any related dangers, to act on their immediate removal and then their containment throughout organisational measures and P.P.E. (similarly to the workplace safety regulations)
- ▶ **Choose a supervisor** within the organization to follow planification, implementation and control of the containment measures decided
- ▶ Adopt a **specific procedure to follow in case of symptomatic manifestation** within the public and/or employees (individuals with fever, breathing problems, etc..), deciding «who does what» and which authorities to contact
- ▶ Exhibit **adequate signage** at the entrance, along the tracks and in the sanitary facilities, also using the current available resources (vd. <https://who.canto.global/v/coronavirus/album/O6MBD?from=thumbnail&scrollTo=658&gOrderProp=uploadDate&gSortingForward=false&display=thumbnail&viewIndex=1>)
- ▶ Guarantee the availability of **protections** for the park employees (latex gloves, medical face masks and FFP2/FFP3 respirators)
- ▶ Guarantee the availability of **liquid sanitizers** to clean surfaces and also for the public to use in several locations in the park

ORGANISATIONAL MODEL AND CRITICALITY

	Park preparation	Entrance /ticketing	Dressing/ handover P.P.E.	Briefing	Activity/ surveillance and rescue	Undressing/ drop-off P.P.E.	Park closing
Gathering*	● ● ●	● ● ● ● ● ● ● ●	● ●	● ● ● ● ● ● ● ●	●	● ●	● ● ●
Droplet	● ●	● ● ● ● ● ● ● ●	● ● ● ●	● ● ● ● ● ● ● ●	● ● ● ●	● ● ● ●	● ●
Surfaces	●	● ● ● ● ● ● ● ●	●	● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ●	●	● ● ● ● ● ● ● ●
Objects	● ●	● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ●	●	● ● ● ● ● ● ● ●	● ●

- ▶ Entrance/ticketing and briefing are the higher risk phases, due to the high number of people normally involved, the contact between employees and public (for help and directions), exchange of objects (money, credit cards etc.) and will need to be adjusted accordingly.
- ▶ The exchange of food and beverage will have to be adjusted to respect the regulations for bar and catering activities
- ▶ Regarding merchandising sales activities souvenir refer to the specific regulations for the retail commerce sector

* more than 2 individuals in the same place

DEFINITIONS

Distance between individuals

- >2m without face masks
- >1m with face masks
- Reduced when it is necessary to get closer for specific operations (e.g.: harness inspection, rescue...)
- Reduced in cases the individuals are part of the same social group (e.g.: they live together, traveled in the same vehicle, etc...)

Detergents/disinfectants

Bleach or 1% active chlorine based solutions, solvents, 75% alcohol (ethanol), Peracetic acid and chloroform

PARK PREPARATION (1/2)

Addressed to	Danger	Solution	Requirements
All the employees	Gathering	Keep distance between people	<ul style="list-style-type: none"> • Staff training • Individual lockers • Staggered access to staff rooms in narrow spaces
All the employees	Droplet	Mechanical barrier	<ul style="list-style-type: none"> • Medical face masks
All the employees	Contact with surfaces, sheets, pens	Continuous cleaning	<ul style="list-style-type: none"> • Disinfectants • Disinfectant GEL Dispenser • Disposable latex gloves
Employees working in altitude	Contact with routes and collective devices	Mechanical barrier Sanitization	<ul style="list-style-type: none"> • Specific individual or disinfected P.P.E. (harnesses, kit etc...) • Medical face mask • Coated work gloves*

* Only for employees in charge of inspecting routes

PARK PREPARATION (2/2)

- ▶ The park preparation must include - in addition to the usual activities - the accurate cleaning and disinfection of:
 - Sanitary facilities
 - Large contact surfaces (desks/benches, doors, knobs, shelves etc.)

ENTRANCE/TICKETING (1/2)

Addressed to	Danger	Solution	Requirements	Notes
Awaiting customers	Gathering	Keep distance between people	<ul style="list-style-type: none"> • Ground signage* • Signage • Personnel training 	
Customers	Droplet	Mechanical barrier	<ul style="list-style-type: none"> • Transparent protection panel 	
Entrance employee/cashier	Droplet	Mechanical barrier	<ul style="list-style-type: none"> • Transparent protection polycarbonate panel or similar • FFP2, FFP3, N95 face masks 	The cashier has to use the FFPX face mask for protection from potential customers without face masks
Customer	Contact with surfaces, sheets, pens, POS...	Continuous cleaning	Disinfectants available to clean hands at the entrance and in the facilities	
Cashier	Contact with surfaces, sheets, pens, POS...	<ul style="list-style-type: none"> • Continuous cleaning • Hand protection 	<ul style="list-style-type: none"> • Disinfectants • Latex gloves • Disinfectant GEL Dispenser 	

* E.G: a 1m x 1m mesh eye-catching coloured custom made rope "net" or with coloured tape

ENTRANCE/TICKETING (2/2)

- ▶ **Single face mask for customers**
 - Recommend the use of a personal medical face mask to the customers (on your website, on-site signage)*
 - Provide the medical face mask to whom may not have their own (also to customers who have FFP2/3)
- ▶ Communicate clearly (at the entrance, with signage and on the regulation) that customers presenting clear breathing symptoms will not be permitted in the park or will be sent out of the park
- ▶ **Payments**
 - Prefer electronic payments (ideally pre-payment via web)
 - Prefer contact-less payment (mobile-pay)
 - Prefer separate POS terminals for cashiers and customers
- ▶ **Forms**
 - Substitute check-in operations (paper sheets completions) with electronic forms on the website, filled in and sent back by the customer via e-mail (ideally before the arrival, otherwise on site)
- ▶ **Ticketing**
 - Eliminate paper ticket (electronic ticket on mobile device)
- ▶ **Animals**
 - Preferably, the access with animals should not be allowed, on account of being possible chance of contact between individuals (at the moment there is no evidence that pets can spread the virus).
 - Animals will have to be kept on a leash (or similar)
- ▶ At the moment it is unrealistic to hope there will be availability of medical face masks on the market to hand out to each customer

DRESSING AND HANDOVER P.P.E.

Addressed to	Danger	Solution	Requirements	Notes
Customers	Gathering	Keep distance between people	<ul style="list-style-type: none"> Staff training Ground signage 	
Customers	Droplet	Mechanical barrier	Medical face mask	
Customers	Contact with PPE handed over	<ul style="list-style-type: none"> Protection helmet: do not use it¹ Harness: sanitization with steam² 120<T<150° C from 10-15 cm for 5<t<8 sec. on each zone Lanyards/lifeline carabiners/pulleys: same process as harness 	<ul style="list-style-type: none"> Procedure Steam dispenser Suitable clothing Coated work gloves 	
Employees	Droplet	Mechanical barrier	Medical face mask or FFP _{≥2}	If the customers do not have face masks the employee must be protected
Employees	Contact with PPE handed over	Sanitization PPE (see above)	<ul style="list-style-type: none"> Steam dispenser Coated work gloves 	<ul style="list-style-type: none"> Let the customer put on the PPE (guided by group presentation) The instructor gets closer for the final inspection Colour-code the PPE to facilitate visual inspection

^[1] See. GoApe Policy – protect obstacles and head-trauma risky zone, update signage

^[2] <https://www.ajicjournal.org/article/S0196-6553%2808%2900557-9/abstract>

REMOVAL OF PROTECTION HELMET FOR CUSTOMERS



- ▶ Experiences in other European countries (UK, Germany and France) demonstrate that the removal of the helmets:
 - do not raise the cases of head injuries due to falling (see UK-GoApe: >10 milion users, 3 minor head injuries)
 - reduce the false-security sensation, improving focus
 - eliminate the risk of getting tangled up or strangled (see 2018 accidents)
- ▶ At the moment the elimination of a possible contagion surface is certainly positive and compensates with the few negative aspects
- ▶ **The elimination of one PPE (ONLY FOR THE CUSTOMERS) is to be combined to a reduction of potential head injuries risks and to a particular risk evaluation for each park**

STEAM SANITIZATION P.P.E. (FOR CUSTOMERS AND EMPLOYEES) 180 / 120 ° C

Following some researches in collaboration with P.P.E. manufacturers, it was found that:

- ▶ The dry steam superheated to 180 ° C dispensed by professional devices is an efficient disinfection measure on surfaces and objects against most viruses, spores and bacteria (included SARS-type viruses), please follow the manufacturer's instructions for the device, keeping in mind that:
 - if used on P.P.E. keep a 15 cm minimum distance and a 5 seconds maximum time limit for each area.
- ▶ The 120 ° C steam, dispensed by any appliance:
 - can be as efficient if used for a longer time than dry-superheated steam (+150%)
 - it is **compatible with all the fibres** used on P.P.E. (in particular polyesters e polyamide like nylon and similar, kevlar*) provided that the action is limited, keeping a minimum 10 cm distance between the nozzle and the surface/object to treat, persisting on the area for a time between 5 and 8 seconds on each area
 - Does not leave traces of humidity that could facilitate the growth of mold or similar**

* These guidelines have been developed in collaboration with the main P.P.E. manufacturers. Avoid steam on Dyneema fabric

** A more frequent cleaning with hot water and soap is to be performed anyway

BRIEFING

Addressed to	Danger	Solution	Requirements
Customers	Gathering	Keep distance between people	Ground signage*
Customers	Droplet	Mechanical barrier	Medical face mask
Customer	Contact with PPE provided	<ul style="list-style-type: none"> PPE sanitization 	<ul style="list-style-type: none"> Devices/procedures agreed with manufacturers Suitable clothing and gloves
Employees	Droplet	Mechanical barrier	FFP2, FFP3, N95 masks
Employees	Contact with PPE provided	<ul style="list-style-type: none"> PPE sanitization 	<ul style="list-style-type: none"> Devices/procedures agreed with manufacturers Coated work gloves
Employees /customers	Accidental contact	Sanitization	Disinfectant GEL Dispenser

* E.G: a 1m x 1m mesh eye-catching coloured custom made rope "net" or with coloured tape

ACTIVITIES ON THE COURSES

Addressed to	Danger	Solution	Requirements
Customers	Gathering at the entrance of the course	Keep distance between people	Ground signage*
Customers	Gathering on the courses	Stay on the platform reduced to 2 people per platform**	<ul style="list-style-type: none"> • Signage • Customer training
Customers	Direct contagion (droplet)	Mechanical barrier	Medical face mask
Customer	Contagion via contact (PPE handed over)	• PPE Sanitization	<ul style="list-style-type: none"> • Devices/procedures agreed with manufacturers • Suitable clothing and gloves • Good hygiene practices (washing hands and avoiding contact with eyes and mouth)
Customer	Contagion via contact (course elements)	• PPE Sanitization	<ul style="list-style-type: none"> • Suitable clothing and gloves • Good hygiene practices (washing hands and avoiding contact with eyes and mouth)
Inactive customer (attendant)	Direct contagion (droplet)		<ul style="list-style-type: none"> • Signage (keep distance) • Customer training
Inactive customer (attendant)	Contagion via contact (course elements)		<ul style="list-style-type: none"> • Suitable clothing and gloves • Good hygiene practices (washing hands and avoiding contact with eyes and mouth)
Employees	Droplet	Mechanical barrier	• N95 face mask
Employees	Contagion via contact (course elements during rescue)		<ul style="list-style-type: none"> • Suitable clothing and gloves • Good hygiene practices (washing hands and avoiding contact with eyes and mouth)
Employees	Direct contagion (droplet) during rescue	• Mechanical barrier	<ul style="list-style-type: none"> • N95 face mask • Gloves
Employees / customers	Accidental contact	Sanitization when back on ground	Disinfectant GEL Dispenser

* E.G: a 1m x 1m mesh eye-catching coloured custom made rope "net" or with coloured tape

** Keeping the recommended personal distance

RULES ON THE COURSES AND EFFECTS

- ▶ Staying under the courses is permitted only if everybody is wearing the face mask
- ▶ For junior courses, only one adult can accompany the child
- ▶ The presence of maximum 2 individuals per platform: effects on capacity of the park:
 - Each participant can access the game module only when its arrival platform has no more than one person: the **maximum capacity of a course i** is therefore*:
 $C_i = 2N_i + 3$
 N_i being the number of games in the route;
 (the maximum capacity is lowered to $C_i = N_i + 2$ in case of decrease to one person per platform maximum, decreasing then to a 1.5 - 2.0 factor based on the number of games)
 - The **total capacity of the park** will then be $C_{tot} = \sum_i C_i$
 - The **hourly capacity** of the course i will be equal to $P_i = \frac{60}{t_i^*}$
 with t_i^* being the time in minutes required to complete the longest module (eg: the longest game requires 4 minutes: the hourly capacity is of 15 users/hour)
 - The total hourly capacity of the park parco can be easily estimated with the formula:

$$P_{tot} = \gamma \sum_{i=1}^k P_i$$

with k being the number of first level courses (e. green course)** and γ being a multiplication factor which may vary between 0.9 and 1.1, based on the average number of users who proceed directly to courses at level 2 or higher.

- * It is supposed that the course is a simple sequential path, including one individual entering the course and another one exiting it
- ** Warning: it is supposed that the number of courses is decreasing going towards higher levels at the same rate as the decrease of customers: with the increase of the difficulty of the levels a number of customers refuses to proceed. If everybody goes on to the second level, k will be the number of courses at level 2

RESCUE AND ASSISTANCE

- ▶ ASSISTANCE ON THE COURSES
 - ▶ The instructor has to wear a FFP \geq 2 face mask and coated working gloves
- ▶ RESCUE (DESCENT)
 - ▶ In addition, the instructor/rescuer also has safety glasses
 - ▶ Has to be prepared to manage the sudden gathering of people in the surrounding area of rescue

UNDRESSING AND DROP-OFF P.P.E.

- ▶ Same measures as Dressing/handover p.p.e.
- ▶ **Locate a restricted and marked area** to stock p.p.e. while waiting for it to be sanitized
- ▶ The eventual disposal of p.p.e. used by the customer (e.g. disposable gloves, hairnets) will have to be done using separate containers based on the local garbage disposal policy, ensuring the **hermetical sealing of the bags once they are full**

Legal Notes

The steam sanitization of p.p.e. (harnesses, lanyards, cordage...), as indicated in this document, is a method that has not been tested yet, so there is no clear evidence of its virological/bacteriological effectiveness, nor its compatibility with the specific fabric fibers. However, the recommendations in this document are the outcome of a thorough analysis of each factors involved, the available scientific literature and Association's dialogue with several important manufacturers in this industry, who have not endorsed our proposals yet, while further tests and researches are being conducted.

The steam sanitization appears to be the only proven method in healthcare that could have effect in the parks' management (long cycles of hand-cleaning with soap and water and drying once a day, which are generally recommended, are rather impracticable due to the high commitment of resources necessary).

It is recommended to apply the guidelines only after the analysis of your own devices and, in any case, accompanied by a closer check of the integrity of the p.p.e. compared to the usual management (for example by paying attention to signs of discoloration, detachment or erosion of fibers).