

Saxetenbach Canyon Disaster 1999

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Section 1: Setting the scene - What is canyoning?

This is a activity which combines water and rock elements throughout. The Adventurous Activities Licence Authority (AALA) (as cited on Mountain Training 2024), describes canyoning as “usually wet, it traditionally involves the descent of a steep water course and sometimes involves technical rope work.”



Section 1: The Saxetenbach Gorge

The Gorge, has been used for groups and sessions for many years, “offering everything imaginable in the world of canyoning: Abseiling, jumps into pools of water and rocky water-slides.” (Switzerland Tourism, 2024).

“All this makes it a perfect place to cautiously get the feel and idea of what canyoning is all about!” (Switzerland Tourism, 2024). However caution must be taken as the river is also described to “flow through a steep-walled canyon”. (Baierlein, 2023)

Adventure World, the company responsible for taking the groups into the gorge, was co founded by Georg Hoedle. Who stated “We ran over 35,000 people through the Saxeten before this accident occurred.” (Jenkins, 1999) Hoedle also stated that the worst injury that the company had seen in the gorge prior to the incident was “a broken leg” (Jenkins, 1999). This could raise the question what was considered by the company after the broken leg incident to prevent further incidents from occurring.

Section 2: The Incident

Overall 44 participants were taken out into the gorge for a canyoning experience with 8 guides from Adventure World, totaling 4 groups of roughly 11 people with 2 guides per group. On the day of the incident, “It was raining and there was lightning as we drove up to the canyon says Kelly Brajkovich” (Jenkins, 1999). Brajkovich continues to say “by the time we were in the canyon, it was raining hard and it was very dark.” (Jenkins, 1999).

Brajkovich states that at 5:40pm their group were trying to cross a tricky section, which the guides call ‘ the fridge’. Potentially one of the trickiest parts of the gorge as the participants must lower into freezing water whilst being pressed into the rocks around them. After resting on a ledge to re-catch their breath, due to not being able to make it across Brajkovich, remembers hearing a scream from one of the guides, emphasising the importance for them to “ get out of the water!”. (Jenkins, 1999).

The importance of getting out of the water is highlighted by Brajkovich saying that there was a “ two-meter high wave, like an avalanche, brown thick water with everything in it, boulders and logs, coming right at us,” (Brajkovich, 1999). It is said that the participants had around 2 seconds to react and get themselves to safety, some managing to escape the current, however participants upstream got washed down past the lower groups in the high currents. “Two of the four groups were caught in the steepest section of the gorge, where the sheer cliffs make escape to the side impossible.” (Baierlein, 2023)

Section 2: The Incident - part 2

Abbott and another guide who had managed to drag himself out of the carnage, began running downstream towards an eddy where they hoped survivors may be. As they went down the gorge they found three clients circling in the whirlpool, who were barely alive, they were able to pull them out.

Meanwhile, after jumping into 'the fridge' to rescue one participant, Müller jumped back into the flood and pulled a second client to safety. She instantly done this again rescuing a third person. However the fourth time she entered the water to attempt to save a casualty, "the current caught her and swept her away forever." (Jenkins, 1999).

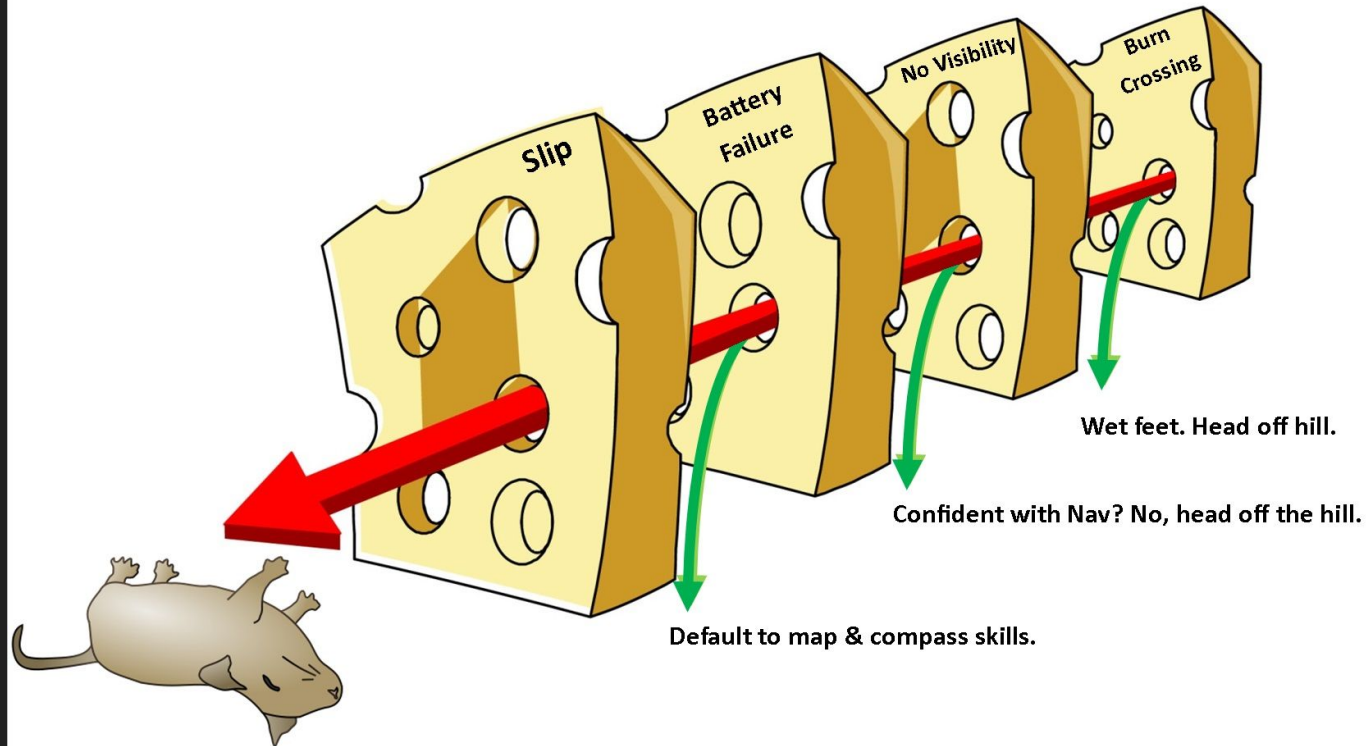
This flood and incident took the lives of 21 people in total, 18 participants & 3 guides from Adventure World.

Section 3: The Swiss Cheese Model (SCM)

The Swiss Cheese Model is a concept used in risk analysis and risk management, originally created by Reason (1997), is designed to highlight the importance and potential for how planned systems may fail and therefore how accidents and incidents may occur. The model illustrates that accidents are not caused by a single factor, but rather by a combination of multiple failures or weaknesses in a system.

The idea is that the SCM is a system designed to prevent errors and accidents, through multiple layers of defense, represented metaphorically as slices of Swiss cheese. Each layer (or slice) has its own strengths and weaknesses, represented by holes in the cheese. When these holes align across different layers, they create a pathway for errors or hazards to pass through, potentially leading to an accident. The model also highlights that no single layer of defense, or preparation & planning is foolproof. As each layer may have its own limitations or vulnerabilities. However, by having multiple layers stacked together, the chances of all the holes aligning at once are reduced, therefore reducing the overall likelihood of an incident occurring.

The Swiss Cheese Model of Accident Causation



Section 3: relating the SCM to Saxetenbach

From looking at the incident, there are many layers of the 'cheese' that Adventure world, should have considered to prevent the incident from occurring. For example the weather conditions on the day should have been thought about in more detail than they were. This would have been the first 'layer of cheese' as would the guides checked the weather and considered the effects that would of, and did, happen to the gorge as a result of the weather. This could have prevented them from entering in the first place.

The next layer of cheese that could have prevented the incident if properly planned and considered, was the level of experience that the guides had. Burt, who was a experienced guide stated that "Seven of the eight guides in the canyon on the day of the accident were first-year guides." (1999) he goes on to say "With the experience those guides had, they couldn't have known what was going to happen... It is the responsibility of the company to educate the guides about all the possibilities, and they did not do this." This highlights the level of negligence that the managers within Adventure World had to their participants. As a official training and competency test was not given to the guides prior to them being leads on the activity. Therefore, this is part of the cause of the lack of competency within all the guides who were supposed to keep people safe.

Section 3: relating the SCM to Saxetenbach - part 2

On their approach to the canyon, the groups were met by members of the local fire service, who voiced their opinions on the gorge on the day, stating that they don't think they should be heading into the gorge. However this was quickly shut down by the instructors as the fire officer reports "I couldn't stop them," (Seemater, 1999). With the instructors reply being "We know what we're doing. We know our job." (Seemater, 1999). Should the guides have listened to the fire officer, then this would have been another layer of cheese for the activity, which would have prevented the 'holes' from lining up.

A very large hole within their cheese, was later discovered in 2001, when "a trial found that the company did not have written safety guidelines." (Baierlein, 2023). Written procedures, such as Standard Operating Procedures, Risk Assessments, Emergency Action Plans & Written weather Condition Permissions, would have emphasised to the company that entering the gorge on the day of the incident was out of the normal, and as a result, came with a higher risk. These important documents will have given the guides a further understanding of get out points of the gorge, what to do in an emergency, who to contact for help ETC. all of which are basic things that a safe and competent centre should provide and instructor should have read.

Section 4: Reflective Process

From reading about this event and the SCM, and how it can prevent an incident from occurring, when considering my own personal outdoor facilitating, I will use the SCM as a way to prevent an incident from occurring. For me this will be done by ensuring I am comfortable, confident and competent with each session I deliver, not operating outside of my personal limits or boundaries. Also I will put 'layers' into my sessions to prevent the holes of the cheese lining up, this will consist of sufficient safety brief, dynamic risk assessments, reviewing group ability and dynamic throughout and carrying safety equipment which will get me out of tough or tricky situations.



Risk Assessment for SaxetenBach:

Gorge Walking and Canyoning Risk Assessment (to be read in conjunction with the generic risk assessment common to all activities)			
Hazard	Control Measures	Residual Risk	Comment and further action
Drowning	Instructors choose to issue buoyancy aids based on the venue and plan for the session. These to be checked for correct fitting by instructor.	Low	Continual monitoring of condition of PPE
Fall from height	Suitable route choice, use roped protection	Low	
Falling Objects	Suitable helmets to be worn by all participants. Route choice to best avoid time in loose areas.	Low	
Entrapment	Suitable route choice, group management Instructor to carry knife in case of rope entanglement	Low	
Being washed downstream	Route choice, monitor water levels, consider carrying throwline	Low	
Jumping injuries: - Shallow landings - Winding and water impact injuries - Landing on others	Instructor familiarity with suitable jumping spots and/or instructor to jump first in a progressive manner to test the depth to see if it is suitable. Jumps that require 'clearing' rocks will not be used. Group to be observant of others in the water and instructor to control when people jump if necessary. Participants to be clearly briefed in suitable landing techniques and to prove they can do this properly in order to jump from higher up.	Low	
Getting Stuck whilst weaseling	Briefing, route choice, group management	Low	
Rapid rise in water level	Check weather forecast and history, observe for water discoloration, monitor water level	Low	
Fallen or hanging trees	Observation of any new fallen trees, route choice and group management	Low	Reporting of any changes
Loose boulders in walls and floor	Route choice, briefings, group management	Low	Report any notable boulders
Unc clipping from clip lines prematurely	Group management and observation, briefings	Low	

References:

- AALA. “Combined Rock Water Activities.” Mountain Training, 2024, <https://www.mountain-training.org/help/downloads/combined-rock-water-activities#>.
- Baierlein, Jeff. “Outdoor Safety In Switzerland: Laws and Regulations on High-Risk Swiss Adventure Activities.” Viristar.com, 4 June 2023, <https://www.viristar.com/post/outdoor-safety-in-switzerland-laws-and-regulations-on-high-risk-swiss-adventure-activities>.
- Brajkovich (1999), interview participant with Jenkins 1999)
- Burt, (1999) interview participant with Jenkins (1999)
- Jenkins, Mark. “A Storm in the Distance.” Outside Magazine, 1 November 1999, <https://www.outsideonline.com/outdoor-adventure/exploration-survival/storm-distance/>.
- Reason J. (1990) Human Error. Cambridge: Cambridge University Press
- Switzerland Tourism. “Easy Saxeten Canyon.” Switzerland, 2024, <https://www.myswitzerland.com/en-gb/experiences/easy-saxeten-canyon/>.