



STREICHER Group

„Water – principle of all things“

IPLOCA Health and Safety Award 2011 sponsored by Chevron



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HSEQ Department

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1. Water – principle of all things

„Water is the principle of all things; all things are created from water and all things return to water.“

Thales of Milet

Already 2500 years ago, the Greek philosopher Thales of Milet (around 624 BC until 546 BC.) recognized something that is still valid today but nevertheless, gets easily forgotten. All organisms consist of water, it is their origin. Even the face of our “blue planet” is characterized by water. The earth’s surface, the outer shell where there is life, consists of 70% water. The same relation exists in our body. This major content shows that water is the basic substance of life.

We as STREICHER Group have put great focus on the meaning of water for the human organism and are aware of the indirect consequences of dehydration: health problems occur immediately – in the form of concentration problems, fatigue and sudden dizziness which can cause accidents with substantial damage. Dehydration is not only a risk for employees in the office but also for the community on site.

With this in mind, the top priority of STREICHER’S HSEQ Management is not only to reduce the accident rate by Personal Protective Equipment and numerous trainings and instructions but also to pay attention to non-obvious influences on accidents and to principally avoid accidents by preventive measures which will be explained more precisely later on. Our aim is to maintain and promote our staff’s health and performance as well as to contribute to their sense of well-being. This aim will be outlined and substantiated with the required knowledge and the reference to practical measures on the following pages.



2. Water as substance of life for human beings

The main part of an adult's organism is water which is contained in all body fluids like sweat, urine, tears and blood. Thereby, water is playing an important role in our body.

The minerals dissolved in water effect the osmotic pressure which leads to a biological balance in the body, protects the organs and ensures a stable biological environment. Further, the body fluids serve as a supplier of minerals and oxygen for the cells which is essential. Even the final products of the digestive process are excreted with water and the body temperature is also regulated by water. Hard work, summer heat and fever make us sweat as water is excreted in this form. The evaporation occurring thereupon is withdrawing heat from the body and cooling it down.

The fact that the human body can survive without any nutrients for up to two months but just three days without water, clearly shows that water is the most important substance in our body. During the day, our body naturally loses water. Therefore, an adult person should drink 40 ml of liquid per kilogram body weight.

Water is the most suitable option but fruit spritzers, teas and fruits in general are also very recommendable.

body weight	liquid required
50 kg	2,0 litres per day
60 kg	2,4 litres per day
70 kg	2,8 litres per day
80 kg	3,2 litres per day
90 kg	3,6 litres per day

Chart: ratio between body weight and liquid required

This information complies with the demand for water per day. Special physical effort or external influences like hot and cold climate require more liquid. Logically, the taller and bigger a person, the more liquid the person needs in order to compensate the daily loss of water.



3. Consequences of dehydration

The compensation of the water balance is important; otherwise, the body cannot fully use its capacities. The consequences of dehydration can be severe and are described as restrictions for body and mind below.

The results are then referred to the special working conditions on site and in the office.

a. Restrictions for body and mind

For one thing, the body reacts with thickening of the blood which has some considerable consequences. Thick blood flows slower, the heart starts racing, the muscles are insufficiently supplied with nutrients and oxygen and the organism's heat regulation worsens. In the long term, health problems with substantial consequences are inevitable. In case of dehydration, headache, dizziness or even fainting, chronic fatigue, adult-onset diabetes, high blood pressure and high cholesterol levels can be the outcome. As far as these problems have not been caused by injuries or infections, even gastritis and large intestine inflammation, diaphragmatic hernia and digestions can be caused by dehydration.

Secondly, dehydration also has an effect on the mental ability; concentration problems and missing vigour can be a sign for dehydration.

Most people underestimate the necessity of drinking during work although studies show that even a 2% dehydration (= a bit thirsty) substantially reduces the stamina and thinking ability. A 4% dehydration (=thirst) leads to a reduction of strength and a 6% dehydration (= strong thirst) makes us feel physical weakness, irritability and exhaustion. An 8% dehydration leads to nausea as well as less motoric abilities, and in case of a dehydration of more than 10% - 15%, it can be life-threatening.

This scientific information has also been confirmed by our company-internal project which was carried out on a volunteer basis. Over a longer period of time, we have asked our colleagues in the office as well as on site, to monitor and record their drinking habits. A drinking diary helped them to record the choice of drinks and the daily amount of liquid consumed. A sensibilisation regarding the choice of drinks and the amount of liquid needed was quickly noticed. The drinking diary, motivation and support via e-mail and questionnaires helped to achieve this.

The consumption of recommended drinks and drinks which fall under the category of semi-luxury food are recorded in the drinking diary. For evaluation, the daily consumption is summarized and shown in a scheme.



With this it can be checked if the employees are drinking enough, maybe even a specific drinking habit might be determined. The communication medium "e-mail" was used for motivation and support. We have sent out e-mails on a regular basis, asking questions like „When have you been extremely thirsty in the last few days?", "How and where were you thirsty?", "What drink do you like most?", "What did you notice when answering the questionnaire?". With help of the questionnaires mentioned, we have encouraged our colleagues to reflect their well-being concerning drinking and also talked about this topic in informal discussions. The main aim of this project was to develop awareness for the body's need of liquid. At the end of the project, all participants met for a final meeting.

Improvements in the company, help for everyone as well as obstacles and difficulties were discussed and conclusions were drawn.

The general credo was positive, many colleagues reported about more energy and efficiency. As the initiator of this project, even after the end of this project, you feel responsible to implement possibilities for improvement in the form of measures. These will be shown on the following pages.



In the following chart you record all drinks that you drink during the day. Please check the relevant box in the chart.
 1 box \triangleq 0,2 litres. Drinks with **blue marking** are especially recommendable. Drinks with **green marking** should be consumed in moderation. If you exceed the recommended daily amount, the boxes are shaded **grey**. The blue and grey boxes are added up in the total column. The evaluation shows if you have drunk sufficiently.

	water	calory-free drinks	coffee	juices	other drinks	total																																								
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Evaluation:

Total number of blue and green boxes

More than 7 portions (\triangleq more than 1,4 litres)	Great! You are drinking recommended amount. But careful – physical effort, heat and dry air can increase your need for liquid.
5-portions (\triangleq 1 – 1,5 litres)	Your amount of liquid consumed is sufficient if you additionally eat enough fruits and vegetables. Try to drink 1 or 2 more glasses of water.
Less than 5 portions (\triangleq less than 1 litre)	Caution, you are not drinking enough. For the sake of your health you should try to drink at least 3 more glasses of water per day.

Total number of grey boxes	
0-2 (\triangleq 0 – 0.4 litres)	Very good! Your bring health and drinking pleasure in a balanced accordance.
3 (\triangleq 0,6 litres)	Your drinking habits are okay if you additionally drink 5 glasses of water per day
4 and more (\triangleq 0,8 litres)	Your drinking habits are not optimal. Try to replace some of your drinks by a glass of water.

b. Reference to site

Under pressure and physical effort on sites, drinking is often neglected or forgotten. The increased need for water and the direct influence of climate are the cause that a deficit immediately has strong effects. With the consequences of a dehydration already mentioned, it becomes clear someone who does not drink enough or nothing at all not only puts himself at risk but also his colleagues.

Especially on construction sites, such losses of efficiency can have negative consequences. Statistics show that most accidents are caused by inattention and negligence.

Furthermore, it should be noted that in addition to summer heat, which already reduces efficiency and power of concentration, there are other aspects which should not be neglected on construction sites. Personal protective equipment which compulsorily includes long pants and a helmet also has to be worn in summer. Adapted to the individual type of work, further personal protective equipment might necessarily be worn. In addition, there are high temperatures on site – welding or cutting are just two examples for the numerous activities which make the workplace feel like a sauna. The last important point which should also be mentioned is the physical strain for our colleagues. If only one of these aspects affects our colleagues, it is reason enough to arrange for a sufficient provision of water. In reality, however, it is the case that all factors mentioned come together on site and that means that the provision of water should be a natural process for a responsible company.

Listing these factors per se seems logical and obvious but even to us this was not clear for a long time. After incidents caused by heat, e.g. exhaustion, sunstroke, heatstroke, accumulated in 2006, the hottest and driest summer in Germany for decades, we have noticed this risk. It was our duty to precisely analyse the reasons for the individual incidents. The assumed connection between heat and incident proved. Furthermore, a correlation between accidents, which can be reduced to the attention deficits, and high temperatures was noticed. This new knowledge also confirmed the good communication between the site managers and our HSEQ Department.

The following diagram shows the above-mentioned relation between temperature and accident frequency. The x-axis is limited to the summer months May to September, the y-axis shows the accident frequency. It is obvious that more incidents were reported in the summer months of 2006 and 2007 than in the rest of the year. Summer 2008 and summer 2009 were quite mild which can be seen in the low curve. Although summer 2010 shows similar average and maximum temperatures as 2007, we had less accidents. This indicates that the system of water provision is successful. A short link to the decrease of the overall accident figures by 10% encourages us to continue this project in the future.



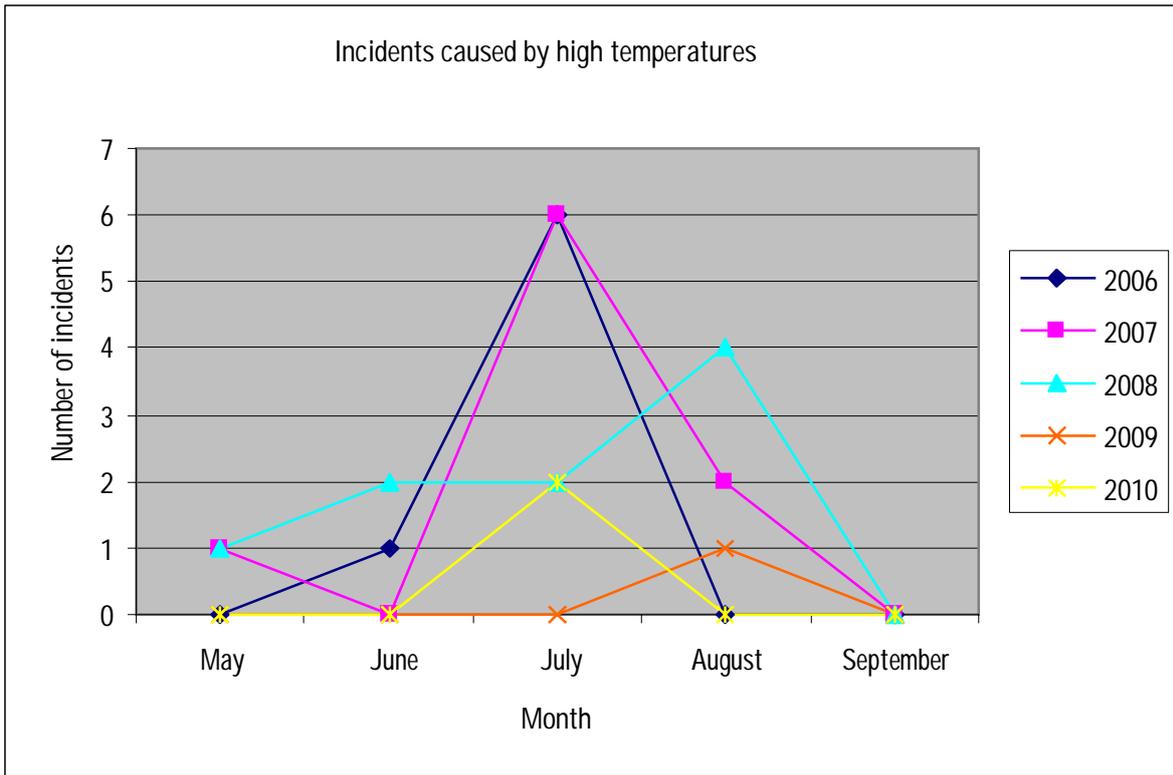


diagram: incidents caused by high temperatures



4. Measures against dehydration

It is our duty to not only protect our colleagues against obvious hazards but also against these which get forgotten or underestimated. Therefore, we have taken specific measures which are explained below.

a. Instructions

In order to assure that the actions to prevent dehydration are successful, a sensibilisation of all colleagues in the office as well as on site is our top priority. Only if everybody is familiar with the basics and contents regarding „dehydration“, they are willing to learn more and to understand and support the measures. This information can be provided in the course of the daily instructions which are carried out on site anyway. However, it is also important to remind the colleagues in the office to drink enough; on hot summer days the subject is briefly mentioned during the regular departmental meetings.

b. Posting: dehydration chart

One of the reasons why many dehydration accidents happen despite intense training and instructions by experts, is the fact that many people do not know how little they have drunk during the day. This is also confirmed by the following statement: even if the signs of dehydration like headache and fatigue occur, the cause is often misjudged – most people take medication instead of drinking some water.

That's why we have put special focus on cause investigation and have taken a measure which should help our colleagues to realize when they have not drunk enough.

It sounds banal but it is the easiest and most effective possibility to recognize dehydration. The less liquid in the body, the darker the colour of the urine. Therefore, the optimal amount of water can be seen in the urine's colourlessness. In order to have the optimal amount of water in the body and to protect our colleague's health, we have created a dehydration chart. The chart was also posted in toilets on site and in the office and serves as a permanent reminder to drink.

The following paragraph describes the posting "Am I dehydrated?". The title directly points out the intention of the chart. One sentence in the beginning explains the posting's purpose, followed by a reference value regarding the amount of liquid to be drunk per day. The dehydration chart is the main part – different shades from white and yellow to brown can be equated with the urine colour. Depending on the urine colour, the person should drink more.

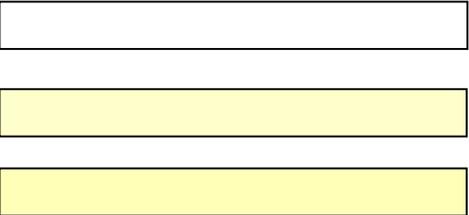
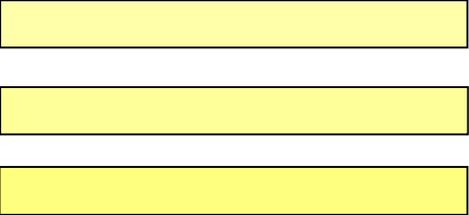
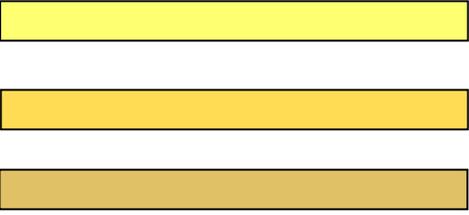


Am I de-hydrated?

This urine colour chart is a simple tool you can use to assess if you are drinking enough fluids throughout the day to stay hydrated.



Remember:
 Drink min. 2,5 litres of water/liquid per day!
 Isotonic drinks, hydrous fruits are also recommendable.
 Avoid coffee and alcohol!

	<p>If your urine matches these colours you are hydrated.</p>
	<p>If your urine matches these colours you are de-hydrated. You should drink more!</p> 
	<p>If your urine matches these colours you are seriously de-hydrated or could have blood in your urine! You should contact a doctor!</p> 

Taking medication can influence the urine colour!

c. Water provision on site and in the office

Sensibilisation regarding this topic, however, is not enough. We are not only encouraging our colleagues to drink more; we are aware of the fact that in order to drink enough, they need to have easy access to drinking water – not only in the office and on flagship sites but also on little construction sites.

Therefore we offer a large selection of tea in every kitchen of our office buildings which are provided free of charge for our employees. Beside common tea, we put special value on very healthy types of tea. Not only since the so-called “Wellness-Teas” have become popular, this offer is also very appreciated in the summer.

Furthermore, various refreshments are offered at cost price. Vending machines are accessible for everyone in central places.

Our concept is also implemented on site, adapted to the different circumstances given, of course. Therefore, we have put up a large number of water dispensers on sites which are maintained in accordance with the strictest hygiene standards and which guarantee constant quality and an absolute purity. These mobile water dispensers give the possibility to offer a large amount of water to our operational employees on site. Besides water, other refreshments in bottles are offered in the construction containers. Both the water dispensers and the drinks in the containers are refilled and checked on a regular basis. In the course of safety and health inspections on site, controls about water provision on site are also carried out.

The permanent contact with our site managers which call our attention to problems ensures that the measures planned are taken and that we are also able to optimize them.

We also would like to mention that the quality of these actions can only be assured by continuous improvement, analysis and the adaption to the specific conditions on site. Therefore, it is necessary to check the measures stipulated for their efficiency.





Photo: water dispenser in construction container



Photo: water provision on site



Photo: water provision on site

5. Conclusion

Concluding, it turns out to be true that you can achieve a lot with little effort. With our commitment to avoid dehydration, we want to show our employees that we care about them and their health and that we do everything to maintain it.

This nomination article for the Health & Safety Award 2011 should be a message for all our colleagues in the industry: we want to encourage everyone to become aware of the principles of life and to promote their employees' health. Water is where everything originated, the principle of all things is water - the substance that keeps us alive.

