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OSHMed Health Magazine

by

SHOCK?!

WHAT TO DO IF YOU HAVE ONE

Additional:

Blood sugar levels that are too high: This is how you can counteract it • Seeing the Forest for the Trees, remembering the basics in Health & Safety • Fun time - Joke of the week

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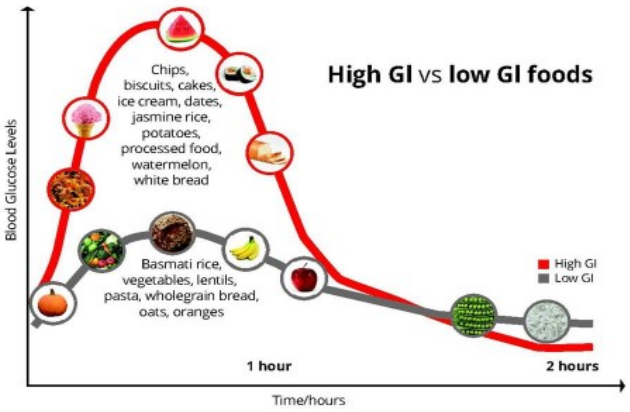
Blood sugar levels that are too high: This is how you can counteract it

Blood sugar spikes after eating are unhealthy and can promote diabetes-related complications.

When we eat something, the pancreas begins to secrete insulin. And usually exactly as much as necessary to lower blood sugar back to the normal range within one to two hours. Things are no longer so easy for those who suffer from diabetes. In type 1, the pancreas no longer produces insulin; in type 2, the body no longer responds adequately to it. A meal rich in carbohydrates can then cause blood sugar to rise sharply.



If such sugar peaks occur frequently after eating, this can promote diabetes-related complications, for example in the eyes or nerves. So what can you do to keep the sugar curve as flat as possible after eating? Five tips and tricks from the experts:

Adjust insulin dose

Anyone who injects short-acting insulin must adapt the insulin dose to the amount of carbohydrates on their plate. It also often makes sense to maintain an injection-eating interval - i.e. wait until the insulin takes effect before eating. How large this distance needs to be should be discussed with the diabetes consultant.

Eat in the right order

In order to keep the blood sugar curve as flat as possible, this order when eating helps: first eat the vegetables and meat, then carbohydrate-containing side dishes such as potatoes or pasta. If there are several courses, eat the salad first. The reason: Vegetables contain fiber and protein (especially legumes), meat contains fat and protein. This slows down gastric emptying somewhat and the sugars from the carbohydrates do not reach the blood as quickly. The portion size is also crucial: eat fewer side dishes (pasta, potatoes, rice), but eat twice as many vegetables.

It is better to eat fruit for dessert

Pure fruit, eaten as a snack between meals, causes blood sugar to rise quickly. This is especially true for sugar-rich varieties such as pears, bananas or grapes. Better: enjoy fruit for breakfast, for example in muesli, or as a dessert after the main meal.

Choose whole grains

When it comes to bread, pasta and rice,

it's best to use the whole grain variety. The fiber in whole grains means that carbohydrates enter the blood more slowly. The effect is particularly great if the whole grain is ground more coarsely and, if possible, grain is also included in the roll or bread. It's best to ask at the bakery. If you bake yourself, simply add a handful of meal.

Prepare carbohydrates in a blood sugar-friendly manner

Not only the amount of carbohydrates influences the sugar curve, but also their preparation. Firm pasta causes blood sugar to rise more slowly than softly cooked pasta. Also advisable: cool boiled potatoes or rice and place them in the refrigerator for at least twelve hours. About a tenth of the starch it contains becomes indigestible every time it is cooled and has a significantly smaller effect.

SHOCK?! What to do if you have one?

Signs of shock can include paleness and cold sweats

When do you speak of a shock?

Shock is a life-threatening condition that can arise from a variety of causes, such as blood loss, an allergic reaction or heart problems (see below: What types of shock are there?).

It is characterized by a mismatch between the amount of oxygen provided and required in the body, usually as a result of circulatory failure. In other words: the body needs more oxygen than it can get. As a result of the lack of oxygen, the body tries to concentrate on supplying the most important organs - which can have fatal consequences for other organs and, if prolonged, for the entire organism.

If left untreated, shock can be fatal - which is why you must call emergency services if you notice any signs of it.

Alert the emergency services!
The emergency number 9112 can be reached free of charge from all landline and mobile networks.

What symptoms can indicate shock?

- The person's skin is pale and sweaty with cold. Attention: In septic-toxic shock (see below), the skin is often warm and well supplied with blood.
- The pulse can be felt quickly and only weakly (fast pulse due to a fast heartbeat: tachycardia, weak pulse due to low blood pressure: hypotension)
- Sometimes those affected tremble or are very restless and anxious.

How do I give first aid after I have alerted the emergency services?

- Stop visible bleeding.
- Call emergency services - emergency number 9112
- Calm the person down, speak well.
- Keep the patient warm. Place him on a blanket or clothing and cover him.
- Put the patient in a shock position - if nothing speaks against it (e.g. suspected heart attack or other illnesses from the list below): with the upper body flat on the floor, the legs elevated by about 30 degrees. Place pillows or other objects under the legs to keep them in the correct position.
- Stay with the patient and check pulse and breathing. If the patient becomes unconscious, you should place him in the recovery position. If breathing or circulation stops, begin resuscitation immediately.

What can speak against the shock situation?

There is a rule of thumb for the reasons that could speak against the use of the shock situation. These are the five “Bs”. Patients should not be placed in the shock position if they:

- suffer from shortness of breath, chest pain, an injury to the chest area or you suspect acute heart disease such as a heart attack ("chest")
- in the event of an injury to the skull (“pear”)
- if you have an injury or pain in the abdominal area ("stomach")
- if a broken leg is suspected
- in the event of injuries to the pelvis or spine (“humpback”)

What are the main types of shock?

- Volume depletion shock: Due to severe blood loss or high water and electrolyte loss (e.g. in burns, long-term diarrhea).
- Hypoglycemic shock: Result of severe low blood sugar, for example in diabetics if the amount of insulin injected is too high in relation to food. If the person is awake, responsive and can swallow without any problems, a piece of glucose or a little cola may be able to help with hypoglycemia.
- Cardiogenic shock: Heart failure, for example due to a heart attack or severe cardiac arrhythmias. Attention: in the case of cardiogenic shock, do not put yourself in a shock position, but raise your upper body!
- Anaphylactic shock: Caused by a strong allergic reaction that affects the entire body. The allergy sufferer's emergency kit can help in this case - used according to the instructions of the treating doctor.
- Septic-toxic shock: When the organism is flooded with bacterial toxins (so-called blood poisoning). There are often no typical signs of shock, but usually just rapid breathing and a high fever.
- Neurogenic shock: A shock caused by nerve damage, such as a spinal cord injury.

Many people understand shock as the psychological state of emergency following a traumatic experience. For some affected people or after extreme situations, professional help from a psychologist or psychiatrist is necessary. Doctors usually describe psychological stress as an acute stress reaction and not as shock.

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Seeing the Forest for the Trees

Don't forget to get back to basics of chemical safety and industrial hygiene.

As EHS professionals mature throughout their careers, their scope of responsibilities inevitably expands from one heavily focused on compliance and basic EHS management tasks to include best practices, EHS management systems, ESG, Total Worker Health and even managing and directing their own team of junior EHS professionals, just to name a few.

Throughout my own career, I've observed instances where EHS leaders became so laser-focused on the big picture that the "basics" tended to be taken for granted or even neglected.

Without a solid foundation of health and safety basics, an employer can have the best-looking management system, but if you aren't able to "walk the walk" when it comes to EHS basics, any system you have in place is nothing more than a house of cards.

An Industrial Hygienist's Point-of-View

As an industrial hygienist who's spent most of her career in the chemical industry, many of the experiences that have stuck with me naturally revolve around industrial hygiene (IH) basics—chemical safety and hazard communication, exposure assessment, ventilation system design and, of course, PPE.

One experience I have reflected on many times was at a facility that cleaned equipment for clients in the semiconductor industry. The individual responsible for evaluating EHS risks (a.k.a. the basics) for the facility was a senior environmental engineer who had spent a decade developing and implementing management systems for multiple organizations. While he did a phenomenal job coordinating the management system at a high level, there were significant gaps at the ground level, especially when it came to EHS basics.

While this person was well aware of the parts cleaning operations, he did not recognize the hazards of the inorganic arsenic (a chemical used in semiconductor manufacturing) that the workers were cleaning off of the parts. Inorganic arsenic causes adverse health effects to numerous human target organs, and the Conference of

Governmental Industrial Hygienists and the International Agency for Research on Cancer have classified it as a known carcinogen. In addition, nobody in leadership at the site was aware that OSHA substance-specific standards for inorganic arsenic applied to them.

Chemical Hazards: Back to Basics

With intensive expertise in chemistry, biology, toxicology, occupational health and substance-specific standards, industrial hygienists are ideally equipped to anticipate, recognize and evaluate chemical hazards in the workplace. All chemical hazards need to be understood in order to comply with Right-to-Know regulations, including OSHA's Hazard Communication (HazCom) standard. This makes industrial hygienists an invaluable contributor to a successful HazCom program that accounts for introduction of chemical hazards and the safety processes necessary to control them.

When evaluating new chemicals being introduced to a workplace, industrial hygienists will typically first look to hazard information within the safety data sheet (SDS) prior to approving a chemical to be brought on-site. Key hazard information includes Globally Harmonized System (GHS) hazard classifications, chemical and physical properties, target organ effects, applicable occupational exposure limits (OELs), first aid precautions, safe handling procedures, exposure controls, PPE requirements and, in the case of our arsenic example, whether there are biological exposure indices (BEI) that need to be followed where medical surveillance is required, along with other hazard information.

Proper chemical safety review is a critical yet often time-consuming process. The industrial hygienist may need to get input from research and development or engineering on how the chemical will be handled, stored and otherwise used in the plant. Depending on the hazards, applicable regulations and BEIs, on-site medical personnel might also need to be

notified that the substance will be on-site. After all reviews and notifications have been completed, the industrial hygienist may either approve or reject the chemical before sending it on to site management for final approval. In many cases, this review and approval is a manual, paper-based process requiring a lot of back-and-forth among stakeholders which can introduce unnecessary delays, communication errors and risks.

Optimizing Chemical Hazard Review and Approval

Considering the volume and variety of chemicals entering workplaces on a day-to-day basis, EHS professionals often find themselves overwhelmed and wondering if there is an easier way to identify priority chemicals and perform new chemical reviews. In addition to providing instant access to a full digital library of your SDS documents, chemical management software can also help you:

- Maintain detailed, real-time chemical inventory control so users can have strict oversight of chemicals and hazards present in the workplace.
- Assign roles to reviewers/approvers before chemicals are permitted on-site, with automated notifications letting reviewers know that they have new chemicals pending review.
- Flag chemicals based on selected hazard criteria (e.g., chemicals listed under OSHA PELs, ACGIH TLVs, Toxic Substance Control Act [TSCA] Chemical Substance Inventory, etc.), prompting further review.
- Filter inventory lists to identify only chemicals of concern instead of everything coming in the door, keeping you focused on priority hazards and saving time.

Building the Bridge to Green Chemistry and Product Stewardship

For industrial hygienists, this software-assisted approval process allows them to spend more time focused on additional steps that need to be taken if a chemical of concern is introduced into the facility. These steps should always follow the NIOSH hierarchy of controls for each new chemical, prioritizing hazard elimination and substitution strategies. This is where green chemistry comes into play.

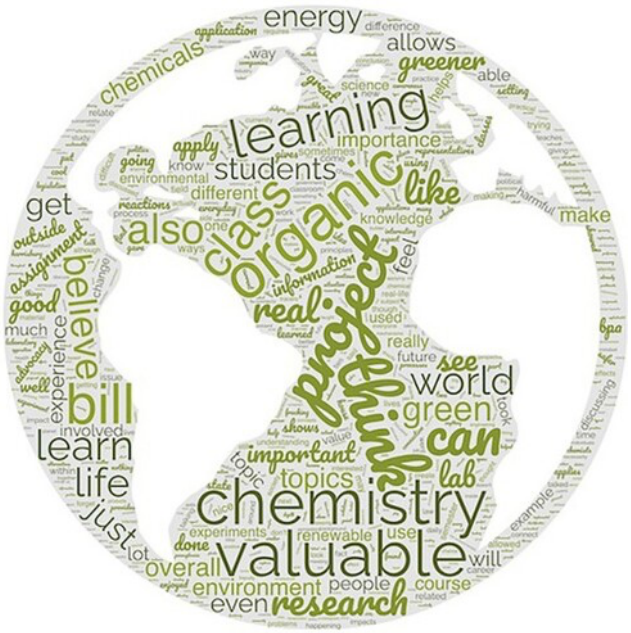
The Chemical Society has established 12 principles of green chemistry, six of which align directly with IH best practices:

1. Prevention
2. Less Hazardous Chemical Syntheses
3. Design of Safer Chemicals
4. Safer Solvents and Auxiliaries
5. Reduce Derivatives

6. Inherently Safer Chemicals for Accident Prevention

When workplace chemical hazards and risks are approached with green chemistry principles in mind, the benefits extend well beyond safety and environmental safeguards to include several other advantages for the organization. These benefits include:

- **Cost savings**–reduce expenses and future risks
- **Efficiency**–improve process performance
- **Industry leadership**–invest in innovation to stay competitive
- **Corporate stewardship**–advance socially responsible chemical management practices
- **Social stewardship**–improving employee safety and well-being



According to OSHA, actively reducing or eliminating chemical hazards at their source is the most effective means of protecting workers, and it establishes a chemical management system that surpasses simple compliance with HazCom requirements. In some cases, unfortunately, substitution with a greener, less hazardous chemical is not an option. Such was the case in our arsenic example, where the chemical was produced as a contaminant by the client who shipped parts to our facility.

Exposure Assessments at the SDS Level

During a new chemical review, industrial hygienists will typically assess the site's existing exposure monitoring data, ventilation specs and other exposure controls to determine if further monitoring will be necessary when the new substance is introduced. What some hygienists don't realize is that we can simultaneously protect workers while reducing the need for exposure monitoring by completing a qualitative exposure assessment (QEA) at the SDS level, prior to a chemical even entering the plant.

Using this proactive approach, substances that have been flagged within the chemical management software will be automatically assigned to the hygienist for approval, allowing them to use the known hazard information in the SDS to conduct their QEA. As mentioned in our Industrial Hygiene Program Management Guide, the AIHA has developed a simple model for conducting QEAs.

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Had I been the site industrial hygienist responsible for doing an SDS-based QEA for our arsenic example, I would have used my knowledge of the site's engineering controls and PPE requirements to hypothesize that the exposure rating (ER) was going to be a 4, while assigning a health effect rating (HER) of 4 since arsenic is a known human carcinogen: ER of 4 x HER of 4 = Risk Rating of 16.

With a risk rating of 16, the QEA would have provided preemptive documentation that handling this chemical with existing exposure controls was going to be a high-risk task. Before the chemical entered the plant, I would have been able to use this information to determine appropriate ventilation and PPE, adjust my IH sampling plan if I did not already have data and educate employees on the hazards being introduced and the controls implemented to protect their health.

Final Thoughts

In our example, had the environmental engineer included IH considerations in the risk assessment process, the hazards of the arsenic would have been proactively recognized and evaluated to determine if the site had appropriate ventilation controls and PPE, and prioritize parts cleaning tasks for additional IH monitoring.

If the company had used a chemical management software solution in their chemical safety reviews, the arsenic could have been flagged due to its acute and chronic health effects as well as OSHA regulatory requirements. The hygienist could have done the QEA before the parts entered the plant and would have known in advance what the risk rating was, along with having already made the determination of what controls were needed. By performing the QEA at the SDS level, we could have then used those findings to focus on chemical safety basics: educating affected workers on the chemical's hazards and how to handle them safely.

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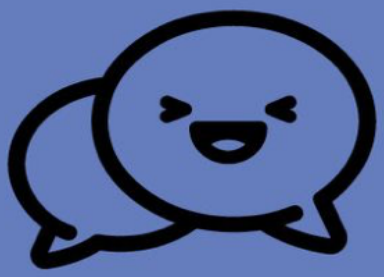

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