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Vienna, 23 June 2026

Press conference on the occasion of the special exhibition “Caution: High Voltage. The electric accident – a class of its own”

Tuesday, 23 June 2026, 10.30 am in the Pathological-anatomical Collection in the Narrenturm

Opening remarks

Dr. Katrin Vohland, Director General and Scientific Director, NHM Vienna

Speakers

OÄ Dr. Viktoria König, Specialist for Plastic, Aesthetic and Reconstructive Surgery
Laura Lick MA, Research Associate of the Pathological-Anatomical Collection, NHM Vienna
Eduard Winter, Custos of the Pathological-Anatomical Collection, NHM Vienna

To the exhibition

The special exhibition is dedicated to electropathology: From their historical development in Vienna and the effects of electricity on the human body, the thematic arc spans from prevention and first aid to medical treatment methods, case histories and electricity accidents in a national and global context.

The exhibition will be on view in the Narrenturm until 24 April 2027.

*„**The electric accident is a class of its own,** which are almost unmistakable to us, almost comparable to the many positions and moves and combinations on the chessboard; and only the one who studies as many ‘positions' and moves as possible will be able to penetrate the spirit of chess, just as only the one who has learned the task and the meaning of electric accident prevention will be able to grasp the task and the meaning of electric accident prevention, who has become acquainted with as many situations leading to accidents as possible; By reasoning, you will be able to counter every move, the right turn, become an independent player, a determined fighter."*
Stefan Jellinek, Elektroschutz in 132 Bildern, 1931:VII

The World Under Electricity

The phenomenon of electricity has been known since antiquity, the first targeted attempts were made in the 17th century. With the industrialization in the 19th century, the electricity found its way into the cities: Light bulbs, electric trams and neon signs fundamentally changed everyday life. However, many people did not know how to safely handle this new energy, which led to numerous accidents.

In the early years of electrification, suitable electrical protection devices such as insulation, fuse and grounding were lacking. Accordingly, there were often serious accidents in the household and industry. A

unified medical approach to treatment did not exist; Many electrical accidents have been treated incorrectly from today's point of view. Among the pioneers who began to systematically investigate the effects of the current was Samuel Jellinek (born 1871 in Prerau, Moravia, d. 1968 in Edinburgh, Scotland). A key milestone was the recognition of ‘sham electric death’ and the possibility of a successful resuscitation.

Samuel (bis 1914) Stefan Jellinek

Samuel Jellinek was born on 29 May 1871 in Prerau in Moravia and died on 2 September 1968 in Edinburgh. He studied medicine in Vienna, received his doctorate in 1898 and habilitated in 1908 as an internist with special attention to electropathology. In 1914 he changed his first name from Samuel to Stefan. In 1919 he took over the management of the electropathological station at the Vienna Garrison Hospital.

Until 1938, Stefan Jellinek was an associate professor at the Institute of Forensic Medicine at the University of Vienna. In the four decades from 1899 to 1938 he also built up the Electropathological Museum at the University as a private collection and opened his Electropathological Museum at the General Hospital in Vienna. On 12 March 1938, the museum contained around two thousand objects, including moulages, anatomical specimens, watercolors, damaged electrical appliances and natural history objects. Due to his Jewish origins, the university dismissed him at the end of 1938. Despite several applications to the Dean of the Faculty of Medicine and the support of his long-time assistant and curator Franz Maresch, who had been Gauleiter of the National Socialist Plant Cell Organisation in Vienna from 1936, when the NSDAP was banned, he was unable to obtain an exemption permit that would have allowed him to continue his work. In August 1939, Jellinek, who had received a post at Queen’s College in Oxford, managed to leave with his wife and two sons before the outbreak of war, but he could not take his collection with him. The Electropathological Museum had already been confiscated by the Gestapo and transferred to the University of Vienna. From 1939 to 1945, Franz Maresch, who was then head of the Department of Occupational Safety in the Office of Social Self-Government and Design of the German Labour Front, continued to work as curator of the museum.

In early 1946, Stefan Jellinek contacted the University of Vienna to discuss the future of the Electro Pathological Museum, which was returned to him by a decision of the Rectorate in July 1946. The collection remained in Vienna, while Jellinek continued to teach at Oxford. After his death in 1968, his son Ernst Heinrich Jellinek, who lived in Edinburgh, was appointed sole heir and in 1980 donated half of the collection of the Electropathological Museum to the Allgemeine Unfallversicherungsanstalt and the other half to the Austrian Association for Electrical Engineering. In 2002, the latter transferred its share to the Allgemeine Unfallversicherung anstalt, which donated the holdings of the Elektropathologisches Museum to the Technisches Museum Wien in 2005. The wet preparations were handed over to the Pathological-Anatomical Federal Museum, which was integrated into the Natural History Museum Vienna in 2012 as a pathological-anatomical collection in the Narrenturm.

https://www.lexikon-provenienzforschung.org/jellinek-stefan

Medical current effects in the human body

How electricity affects the human body was identified by investigating electrical accidents as well as by targeted experiments (among others by Samuel Jellinek). It was shown that electrical influences cause characteristic injuries.

Typical is the so-called electricity mark – a local skin change at entry or exit points of the electricity. This differs significantly from thermal burns and usually runs without infection. Cardiac fibrillation is particularly dangerous: The heart muscle gets out of rhythm, vital pumping movements are omitted. Without rapid defibrillation, this often leads to death.

In addition, the current can severely damage the tissue. The heating leads to burns, inside the body also to the destruction of the tissue, to boiling or even to charring. In severe cases, sudden energy exposure leads to real tissue explosions. These medical consequences show the enormous danger of electrical influences on the human organism.

For a long time, victims of electricity accidents were prematurely declared dead – without resuscitation measures, as ventricle fibrillation was considered incurable. Only after Samuel Jellinek recognised the principle of ‘electric apparent death’ did it become apparent that consistent resuscitation can save lives.

Prevention through knowledge and technology

Samuel Jellinek recognized early on the need to impart knowledge to prevent electrical accidents simply and independently of the level of education. He illustrated or had illustrations made of 132 potentially fatal accident scenarios published in 1931. The aim was to guide people to independent “electrohygienic” thinking.

In addition to education, technical measures play a central role. In Austria, “zeroing” or grounding was introduced in 1927, in which electrical currents are safely dissipated in the event of a fault. Later, the FI switch significantly improved personal protection. Today, standards developed, for example, by the Austrian Association for Electrical Engineering regulate the safety of electrical installations.

From Power Accident to FI Circuit Breaker

The Viennese physicist Gottfried Biegelmeier (1924–2007) specialised in electroprotection and electropathology. After his studies, he realized during his work in testing institutes that legal regulations alone do not provide sufficient protection against electricity accidents. Therefore, he devoted himself to the question of how dangerous contact currents can be technically prevented. Through his research (also through self-experiments) he succeeded in proving that a rapid interruption of the current flow is life-saving.

These findings led to the development of the residual current circuit breaker (FI switch). This continuously compares the flowing current back and forth. If there is a difference (for example, when current flows through the human body), the device switches off the circuit within milliseconds. This significantly reduces the exposure time of the current and thus the risk of serious injuries.

Electricity accidents in Austria – risk and treatment

The medical care in Austria is very well organized, the rescue chain works reliably and necessary measures are taken quickly. After high-voltage accidents, inpatient treatment is necessary in any case. But even after low-voltage accidents without acute symptoms, a medical examination by means of 12-channel ECG is recommended. In case of abnormalities, loss of consciousness, pre-existing conditions, pregnancy, persistent complaints, burns or secondary accidents, at least 24-hour monitoring is required.

Electricity accidents occur most frequently in the context of construction activities. More people with a migrant background work in Austrian construction than without; they provide more than 50 percent of the value added of the industry. Therefore, statistically, men with a migrant background are most often affected by electricity accidents in Austria. This development has grown historically and is related to the recruitment of migrant workers (so-called guest workers) since the 1960s.

Electricity for everyone?

In Austria today, almost all people have access to electricity. Globally, international cooperation has increased the percentage to around 92 in recent decades. Nevertheless, some 666 million people continue to live without access to electricity, most of them in countries on the African continent. People in rural areas and women are particularly affected.

With the expansion of electrification, new risks have also arisen: A larger number of electrical systems also means a greater potential for electrical accidents. Therefore, in addition to development policy financing, preventive educational work for laypeople and skilled workers is also necessary.

The clinical picture of electricity and lightning accidents has hardly changed since the 19th century, although national safety standards have been significantly improved. An important international step forward was the standard IEC 60364 of the International Electrotechnical Commission (IEC): It prescribes residual current protection devices (≤ 30 mA) as additional protection against electric shock.

Press photos: https://nhm.px.media/share/1782125073cHzYa79jjpmzYQ

Rückfragehinweis
Mag. Irina Kubadinow
Leitung Presse & Öffentlichkeitsarbeit, Pressesprecherin
Tel.: +43 (1) 521 77-410
irina.kubadinow@nhm.at

Mag. Klara Vakaj
Pressereferentin
Tel.: +43 (1) 521 77-626
klara.vakaj@nhm.at

Press photos

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