



## INFORMATION BULLETIN OF THE UNION OF MUSEUMS OF SCIENCE AND TECHNOLOGY OF SERBIA



Whitstone bridge, *Felten & Guillaume*, Germany, 1930s.  
Museum of Science and Technology, T:6:202

Exhibit from the exhibition *Meet Electrochemistry Through Belgrade School of Electrochemistry*, held from September 1 to September 19, 2020 at the SASA Gallery of Science and Technology

# LEARNING ABOUT THE ENVIRONMENT TECHNOLOGY

**E**nvironmental protection is one of the key tasks of the modern world. Museum of Science and Technology also accepted this task and included it in the development of the awareness of the individual's behaviour towards the environment.

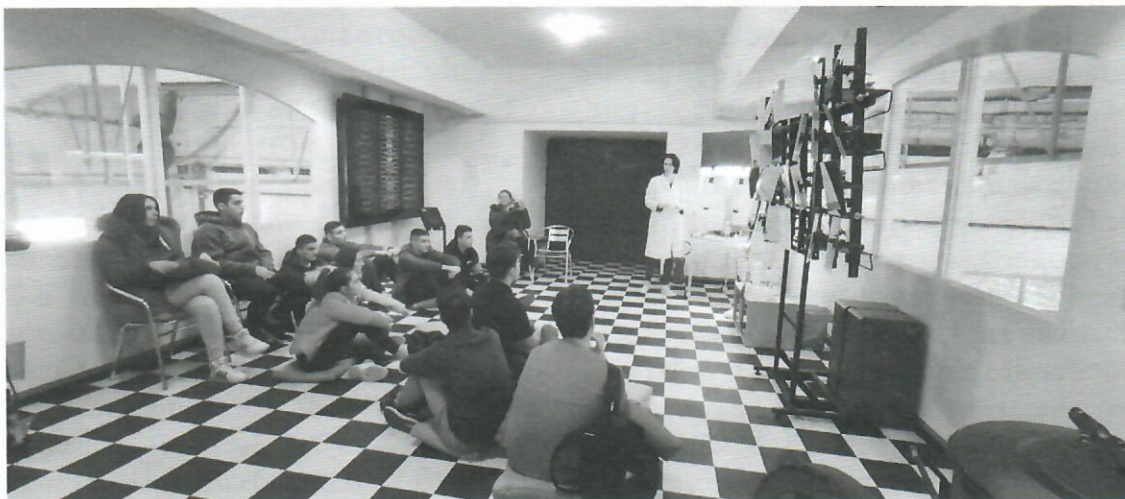
The program of the workshops on the environment – *Great Knowledge – Less Pollution* for elementary and high school students is a result of collaboration between the Museum and the Belgrade University – Faculty of Chemistry. The first workshop in this program dealt with the subject of air pollution and protection, which is current in

everyday conversations as well.

At the Museum Section *Environmental Protection*, as part of the permanent exhibition, there are tabletop recirculation digester and an eco-chemical interactive board. Movable tabletop digester is a chamber for air purification in laboratories. The digester was constructed for the Museum of Science and Technology by mechanical engineer Nebojša Žakula in 2017. Interactive eco-chemical board was made for the exhibition *World of Chemistry* at the Gallery of the Serbian Academy of Sciences and Arts in 1997, and its creator is Prof. Dr Petar Pfenđt from the Faculty of

Sladana Savić,  
curator  
Collection  
The Greats  
of the  
Serbian  
Chemistry,  
Belgrade  
University,  
Faculty of  
Chemistry

Photograph  
of the  
workshop in  
December –  
experiments  
and  
interactive  
board  
(photo:  
Sladana  
Savić)



# AT THE MUSEUM OF SCIENCE AND

Photograph of the workshop in October – experiments in the digester (photo: Slađana Savić)



Chemistry. Restoration of the interactive board was financed by the Museum of Science and Technology. These exhibits have been used at the Museum for organisation of the programs on the environment.

The subject of the workshop, the air, is very current in everyday discussions. The need for this kind of workshop in a museum space is reflected in the poor understanding of the chemical background of the environmental pollution. This kind of approach enables seeing the issue from different perspectives, with development of an atmosphere in which students feel that their comments matter.

The workshop takes place

at the Museum of Science and Technology and it consists of three parts: demonstrative experiments, work on interactive eco-chemical board and a quiz.

Experiments on the digester show all the physical and chemical changes of substances that happen in the atmosphere, with chemical explanations of the causes of air pollution. Glassware and chemicals were provided by the Faculty of Chemistry. Students of the Faculty of Chemistry who perform the experiments wear the prescribed protective equipment for laboratory work.

During the experiments, the students discuss and hypothesize what could be the causes of the phenomena and



Photograph of the workshop in November – discussion during the experiments (photo: Slađana Savić)

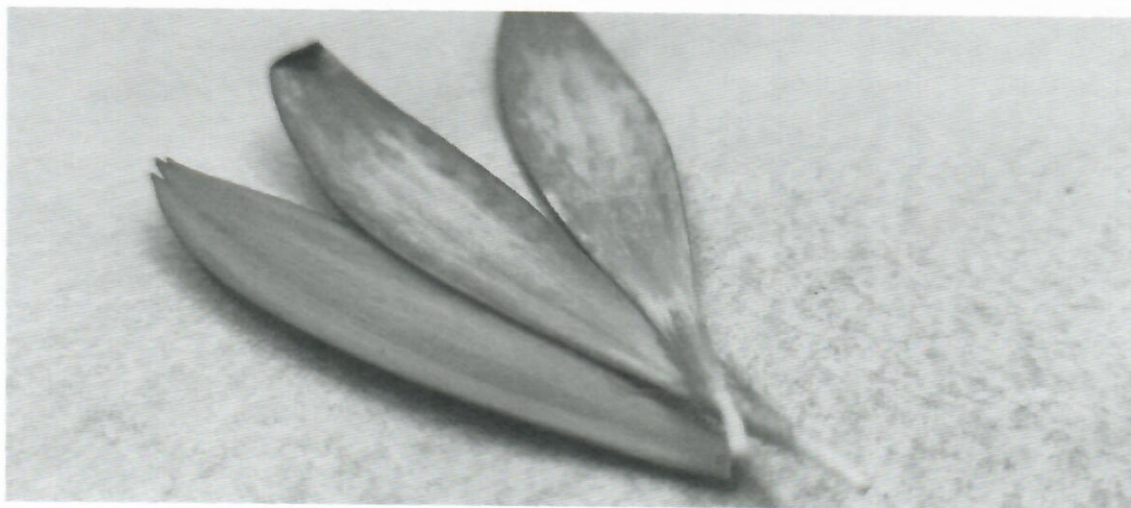
changes that they see and how they impact the air quality. One of the experiments is burning of sulphur powder in safe conditions, i.e. in the digester. Flower petals are used as the confirmation of the creation of acidic gases, which visually presents the significant air pollution with the sulphur oxides. Besides, this experiment is also used for discussion on the sources of sulphur oxides in the atmosphere, as well as changes caused by their increased concentration in the air.

After the experiment, on the interactive eco-chemical board, the students see the connections between the cause

and the consequence of the pollution, which are chemically linked by pollutants. By pressing the buttons placed in three columns (cause, pollutant, consequence), the students can easily discover the links between various human activities and their consequences, i.e. pollution. Work on the eco-chemical interactive board encourages the students to find divergent solutions for a specific problem. The suggested solutions are discussed and the most efficient one is chosen.

The quiz also demands thinking and discussion. The students take questions and chose correct answers among the

Experiment  
– impact  
of sulphur  
oxide on  
flower  
petals  
(photo:  
Slađana  
Savić)



suggested ones or give their own explanations to the open-ended questions. Quiz moderator encourages the students divided in groups to explain their answers with a short comment. Most of the questions are designed in a way that they require an application of chemical knowledge, gained in school classes and in the previous part of the workshop, as well as a holistic approach to finding a solution for problems related to the atmosphere pollution.

Optionally, the workshop can be continued with a visit to our permanent exhibition and the Museum's Science Playroom. The visit is professionally guided by the Museum's curator. Applications for the workshop are organised by the Museum and both institutions are involved in the popularisation of the workshops.

Cooperation between a scientific-research and a museum institution in the field of education of young people has proven to be a successful combination of knowledge and expertise. This kind of workshops in a museum space

encourage the application of chemical knowledge in a new situation and they can point out insufficient understanding or even misinterpretation of the chemical terms in regards to the environmental pollution. Workshop approach contributes to better connection of the students with museums, so that over time, they can gain a habit and a need to be their independent visitors.

The program's authors are Slađana Savić and Jasminka Korolija from the Faculty of Chemistry in Belgrade and Milena Vidosavljević and Tatijana Radaković from the Museum of Science and Technology, who have several years of experience in the fields of museum education, education of young people, as well as the chemistry of atmosphere. Volunteers that participate in realisation of these workshops are students at the Faculty of Chemistry – Katarina Kojić, Marija Stefanović and Milica Tomić ■