STEM CAREERS AND SKILLS OF THE FUTURE

The STEM Alliance proposes a series of online events (webinars and chat discussions) and career sheets that aim to promote Science, Technology, Engineering and Mathematics (STEM) careers with role models. Representatives from companies – partners of the STEM Alliance – are invited to give online and written presentations to inform teachers and students about possible careers in their companies

CHALLENGES AND OPPORTUNITIES IN THE CHEMICAL INDUSTRIES Webinar - 9 May 2019:

Ana Isabel Montenegro García,
Innovation & Improvement Manager,
Chemical Executive Direction at Repsol

Ana Montenegro is a Spanish Chemical Engineer working in Repsol Chemical business leading all cross-cutting projects that ensure the innovation and continuous improvement. She has an experience of 20 years in chemistry having passed through different positions within Repsol: technical assistance and development of polyolefins manager, product manager in pipes, cables, Auto, Polypropylene, EVA and EBA, etc. In addition, she has been the president of the Spanish Committee of Plastics for Agriculture in Spain (CEPLA) and vice president of the international committee (CIPA). Currently, she is Chair of the Young EPCA Think Tank (YETT) as a professional committed to the evangelization of chemistry in society.

Daniel Zweifel,
Crop Defense Solutions, Technical Service and Development at Dow Europe GmbH

Daniel Zweifel studied chemistry education at the University for Applied Sciences in Zürich, Switzerland. He can look back at 32 years of industrial experience in application technology for various industries at Dow Europe GmbH. During his time at Dow Europe GmbH, Zweifel worked for 16 years in application development in the construction and coatings industry. He also worked two years full time on the Six Sigma Black belt for the production optimization of chemical plants as well as two years on leveraged technical service organization optimization through Design for Six Sigma. Moreover, he worked nine years in R&D application development for industrial and automotive lubricants. Since 2015, Zweifel is active in Crop Defense Solutions, Technical Service and Development at Dow Europe GmbH.

What are typical activities in your job?

Ana works in the Business Unit of the chemical part of Repsol which is a multinational Spanish oil and gas company. As Business Development Senior Manager, she is implementing the Repsol growth strategy for chemicals. Her main challenge is to ensure innovation in polyolefins, which are the most common plastics. Some plastics that Ana works with are used in cars. She says the interesting part of this is that these plastics need to have certain properties, such as lightness or the way that they break in case of an accident. She enjoys analysing and mixing the different components of plastic in order to get these properties in the end and send them to customers.

Daniel works at Dow, where he focuses on petrochemicals from a raw material point of view. Many chemicals are used in day to day products, such as packaging, paints or other consumer solutions. In the Technical Service and Development Department, he works closely with customers and helps them to develop and analyse products, which includes adjusting them to customers' needs. Therefore, he works a lot in laboratories to make analyses and develop products.

What are the skills needed in the chemical industries?

Ana thinks that curiosity is very important for STEM careers. Also, she states that you have to embrace challenges.

Among others, Daniel worked in project management and noted that nowadays, we mostly work in teams. That's why it is crucial to be able to work in groups and be productive together. Also, you need to have good communication skills which are very important for project management.

What are the opportunities for advancements?

Ana started studying for her chemical degree first and later continued with chemical engineering in order to better be able to implement chemical innovation projects. She has worked in Repsol all her career and started in the Technical Service and Development 21 years ago. In this position, you have to know the products and explain them well to your customers. Later, she was in the Commercial Department as product manager in which she worked even closer with costumers, selling the products.

Daniel has always been interested in technical correlations and nature as well as experiments in which matter is transformed. He started with an apprenticeship in food science and later studied a bachelor's in chemistry focusing on organic chemistry. Immediately after his studies, he started at Dow in the Technical Service and Development Department, in which he still works today. Over time, he also worked in different areas like Leveraged Technical Service as well as research and Development before he came back to the Technical Service and Development Department.

What are the steps that one could take to pursue a STEM career in chemical companies?

There are a lot of bridges to connect to chemical companies which are not only technical. Big companies like Repsol or Dow also have areas of work that include analysing data or fields related to physics and biology.

Another important asset are languages. It's not only about English but in fact, any combination of several languages can be helpful, as many companies work across countries.

How does the current trend of banning plastics affect the plastic producing companies?

Ana believes that the images of burning plastics raised awareness about the lack of sustainability with the common use of plastics. She says however, that in Europe up to 13 kinds of plastics are recycled in mechanical recycling processes. She encourages everyone to recycle and separate the waste, because the plastics can be used again for plastic production.

At Dow, Daniel tries to reduce the amount of plastic and recycle more. In addition, he also explores other substitute materials like cellulose.

How can teachers support the development of skills for the future?

For Ana, teachers are one of the most important elements to develop a vision for students. One of her teachers strongly supported her in learning STEM subjects, most of all chemistry, maths and physics. What motivated Ana most was to be able to try things out and do hands-on experiments.

What are future challenges of the chemical industry?

We should think more and more about the reuse of products, the reduction of consumption and, of course, also recycling. We equally need to keep in mind that we should reduce the amount of CO_2 emissions and keep pollution to an absolute minimum.

Ana added that if you are open-minded in STEM studies, you are well prepared for future challenges. She underscored that education is the key, since the reason that plastics land in the oceans is because people have not put them in the bin. It's a challenge, she says, but we can tackle it with education.

Helpful links:

- EPCA corporate website
- Petro & Chemistry: Partnership For A Better Life
- EPCA Role Model Series
- Science: Where Can It Take You?
- Chemistry: All About You
- The Young EPCA Think Tank (YETT)
- Career areas in Dow
- Training and experience with Repsol

STEM Alliance http://www.stemalliance.eu

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This webinar has received funding from the European Union's H2020 research and innovation programme – project Scientix 3 (Grant agreement N. 730009), coordinated by European Schoolnet (EUN). This chat is the sole responsibility of the organizer and it does not represent the opinion of the European Commission (EC), and the EC is not responsible for any use that might be made of information contained.

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European Schoolnet is a network of 34 Ministries of Education from across the European member states, leading educational innovation at European level. As a major international think tank, European Schoolnet operates key European services in education on behalf of the European Commission, member Ministries of Education and industry partners. European Schoolnet's activities are divided among three areas of work:

- Policy, research and innovation: information sharing and evidence building.
- Schools services: enhancing cooperation between schools across Europe.
- Advocacy: how ICT and digital media contribute to transforming teaching and learning processes.

About EPCA

Based in Brussels, European Petrochemical Association (EPCA) is the **primary European Business Network** for the global petrochemical business community consisting of chemical producers, their suppliers, customers and service providers. It operates for and through more than 700-member companies from 54 different countries. EPCA **organises conferences and events** in Europe offering members all over the world the opportunity to meet industry leaders and selected external stakeholders and stay abreast of international market developments as well as technological and societal trends. EPCA also **supports** members on **specific topics** that underpin the sustainable development of the global petrochemical industry. EPCA promotes STEM education, with a clear focus on gender and diversity inclusion. EPCA also highlight the multidisciplinary approach and the variety of challenging career paths that the petrochemical industry offers.