Atoms in industry can make a difference: The IAEA Scientific Forum

By Luciana Viegas

Industry has become indispensable to modern life. As the world travels further and faster, cities sprawl into large conglomerates, trade crosses barriers, and friendships are held together by the invisible strings of the Internet, it is hard to imagine a world untouched by large-scale industrial products and processing.

This year's Scientific Forum will focus on the uses of radiation technologies in industry, and how they are applied to control the quality of the products we use in our daily lives, such as car tyres and cables, enhance the durability of a variety of materials, and even sanitize wastewater. Leading experts, academics and industrial representatives will meet in Vienna, Austria, from 15 to 16 September 2015 on the margins of the IAEA General Conference to review the multitude of benefits these techniques offer, particularly in the context of sustainable development.

The Forum will include high-level panel discussions on the following topics:

Battling the bugs

Starting off with the health sector, the Scientific Forum will review how radiation can kill germs to ensure that sterile medical equipment is available for life-saving procedures, help produce more effective vaccines, or make tissue grafts safe for transplants.

Linking the chains

This session will explore how polymers — large synthetic and natural molecules composed of many repeated sub-units — can be made more stable, heat resistant and durable through the use of radiation. These versatile materials are present in many everyday items: for example, around 90 per cent of all materials used to build cars, aeroplanes and computers worldwide contain cross-linked polymers. Such techniques also benefit the medical and cosmetic industries, and even the agricultural sector through products that help plants to grow faster.

Solutions for pollution

Ever-expanding cities and large-scale industry can lead to increasing pollution. This session will look at how radiation techniques have been employed successfully to treat persistent industrial pollutants and to identify contaminating pathways. Several countries have used radiation techniques in assessing and studying environmental processes and in the treatment of wastewater and flue gases, and the Forum will highlight examples in these promising areas.

Tracing the pathways

Radiotracers and nucleonic gauges play an important role in increasing productivity and ensuring quality and reliability of industrial processes and production systems. Experts in this session will share their experiences and discuss how these technologies benefit the petrochemical and mining industries, among others.

Bolstering safety and quality

Non-destructive testing (NDT) techniques, including nuclear techniques, are applied extensively in manufacturing and civil engineering. NDT is a quality control tool used to examine the integrity of components, machinery, buildings and structures to ensure their safety and quality. The Forum will explore examples of the application of NDT techniques and share best practices in creating a qualified workforce to carry out NDT testing effectively, which could be vital in many cases, for example when there is a need to quickly test public civil structures for hidden cracks and flaws.

Rays of hope

Radiation technology offers great opportunities for the future of industry, and the Forum's last session will focus on new developments, including in the areas of nanoscale engineering, health, food and agriculture, as well as in the protection and preservation of cultural heritage.

The Forum will conclude with an open discussion about the added value of nuclear techniques in support of development efforts, and offer a chance for countries to share their experiences and hear more about the IAEA's services in this area.

For more information and the latest agenda, see https://www.iaea.org/about/policy/gc/gc59/scientific-forum. The page will be regularly updated throughout the event to provide summaries of the sessions.

(Photos: IAEA)