Source: kwanchaiff - stock.adobe.com

Proposed restriction under REACH for diisocyanates with the EU Commission and the Member States for political decision. By Jörg Palmersheim, ALIPA

SUPPORT FOR REACH RESTRICTION

Over the years, polyurethanes have been used to a growing extent in a large variety of end uses, like foams, coatings, adhesives, sealants, etc. One of the key components of the polyurethane backbone are diisocyanates, which can exhibit hazards for the human body when improperly used or handled, in particular through inhalation.

In order to further reduce the risks of respiratory sensitisation and further improve safety culture in the workplace, the EU REACH competent authorities prepared a restriction proposal for the use of diisocyanates. The proposal affects substances and products with a cumulative concentration of diisocyanates in the substance or the mixture above or equal to 0.1 % in weight.
The most important measure, as a consequence of the REACH restriction, will be the requirement for a dedicated and documented training of all employees dealing with diisocyanates. In order to answer this requirement, the European polyurethane industry, led by isocyanates producers associations ISOPA and ALIPA, is currently investing significant resources and budget to establish a learning management system to provide the necessary teaching material. This approach will enable a new state-of-the-art set of information that will be well-suited to be integrated into existing OSH practice at industrial level, but also in the professional area.
The proposed restriction at the time has been handed over in March this year to the EU Commission to be discussed in the so called REACH Committee with all 28 Member States.
The European polyurethane industry supports the REACH restriction in order to further enhance the existing product stewardship programmes by industry and to shift worker's safety to the next level.

OVERVIEW OF THE EUROPEAN POLYURETHANE MARKET

The European polyurethane industry is an important contributor to the European economy. Comprising a significant number of SMEs, it employs over three million people along the value chain and has a turnover of more than 200 billion EUR (2013), with stable annual growth.
Due to their high versatility, products made from polyurethanes are indispensable to our everyday lives. Whether it be mattresses, upholstery or car seating, polyurethanes provide daily comfort. Insulation technologies based on polyurethane offer important environmental benefits. In the food sector, insulations all along the cool chain down to modern refrigerators prevent food waste along the supply chain and help reduce our carbon footprint. In construction, insulation materials made from polyurethane are instrumental in increasing the energy efficiency of buildings. Long lasting protective coatings, adhesives and sealants used for metal and concrete structures in buildings as well as in cars and trucks strengthen durability.

DIISOCYANATES : THE KEY BUILDING BLOCK

The bases for the design of polyurethane materials are diisocyanates. Diisocyanates are intrinsically hazardous substances due to their sensitising potential and therefore appropriate technical measures, suitable personal protection equipment and proper information on safe handling are mandatory for their safe use. These technical and

ADVANTAGES OF A TRAINING FOR ALL EMPLOYEES DEALING WITH DIISOCYANATES:

→ A harmonised and unified approach through the whole value chain to make sure all workers dealing with diisocyanates are adequately trained

→ An increase of the educational standard for workers dealing with diisocyanates

organisational safety measures protect employees when working with diisocyanates and diisocyanate containing products. Moreover these measures are systematically communicated to all levels throughout the value chain, using Safety Data Sheets.
In typical industrial uses of diisocyanates such as slab-stock production, insulation foam, appliances, automotive seating, monomeric diisocyanates are processed in closed devices with fixed piping systems. Possible exposure of workers is reduced to the technically feasible minimum.
For the use in widespread professional applications like coatings, adhesives and sealants, diisocyanates are typically converted into higher molecular weight derivatives, like polymers or prepolymers, prior to their use as hardeners not only for technical properties but also to reduce the possible exposure of workers to diisocyanates monomers. Nevertheless and to improve the safety culture in the workplace, the polyurethane industry, represented through the trade associations ISOPA and ALIPA, successfully launched in the past safety initiatives which have already helped to reduce the number of sensitisation cases significantly. Campaigns like "Walk The Talk" (2006) and "We care that you care" (2010) raised the awareness of workers dealing with hazardous substances and refined measures to avoid contact with diisocyanates and polyurethane hardeners via skin and breathing systems.

GOING FURTHER INTO THE SAFE USE OF CHEMICALS

In order to further reduce the risk for workers and users of polyurethane compositions to potentially suffer from sensitisation, the German Federal Institute for Safety and Health (BAuA) has proposed a "restriction" approach under REACH for the use of diisocyanates to further improve safety culture in the workplace throughout the entire value chain. The scope of the proposal concerns substances and products with a cumulative concentration of diisocyanates in the substance or the mixture above or equal to 0.1 % in weight.
Industrial and professional users of diisocyanates or mixtures containing diisocyanates are both affected. The proposal limits the use of diisocyanates in industrial and professional applications to those

> "The European PU industry strongly supports the REACH restriction."
>
> Jörg Palmersheim

cases where a combination of technical and organisational measures as well as a standardised training package have been implemented (detailed out in Appendix 13 of submitted dossier). Technical and organisational measures to protect employees have already been put in place following the recommendations in the respective Safety Data Sheets. The most important change, as a consequence of the REACH restriction, will be the requirement for a dedicated and documented training of all employees dealing with diisocyanates.
This measure is strongly supported by the European polyurethane industry as it is seen to provide some significant advantages in addition to existing regulations:

- A harmonised and unified approach through the whole value chain to make sure all workers dealing with diisocyanates are adequately trained
- An increase of the educational standard for workers dealing with diisocyanates

A broad number of stakeholders will ensure that the training is at the highest standard (Industry experts including value chain, authorities, other stakeholders), enabling to ensure the long term sustainability of the PU industry.
These types of trainings are no novelty to the chemical industry. Occupational health legislation has made them mandatory for decades; not only for those in contact with diisocyanates, but for people dealing with hazardous substances in general. This approach has proven successful, as the number of incidents have been consistently low over the past years.
In some cases, the probability of workers of being exposed to the substances are very low. For instance, in the case of its professional applications, like coatings, adhesives and sealants. Here the use of diisocyanates is an exception and the use of polymers or prepolymers with completely different physical properties, namely high viscosity and low vapor pressure, is preferred. In these cases, consideration is given to decide on possible exemptions from the additional training measures when exposure can be proven to be very low.
Contrary to the cases mentioned above, no exemption would be possible in case of temperatures above 45°C and spray applications.
The European polyurethane industry strongly supports the REACH restriction in order to further reduce the number of sensitisation cases and, at the same time, keep the advantages of PUR-technology available in the European market.

Jörg Palmersheim
ALIPA
joerg.palmersheim@isopa.org