Two European regulatory bodies, the European Chemicals Agency’s Committee for Risk Assessment (RAC) and the Committee for Socio-Economic Analysis (SEAC) voted on December 8, 2017 to approve restrictions on diisocyanates in workplace settings. Diisocyanates are the building blocks (monomers) in urethane plastic and are present in significant amounts in two-component urethane resins, paints, and foam products.

The goal of these proposed restrictions on diisocyanates is to reduce the incidence of asthma attacks stemming from exposure to the compounds. According to the National Institute for Occupational Safety and Health, isocyanates can cause asthma as well as irritation to the skin and mucous membranes. Exposure, even just to the skin, can cause sensitization such that a worker can suffer a severe asthma attack upon re-exposure at a later point. But some isocyanates are also suspected of causing cancer and other toxic effects.

An “isocyanate” is a hydrocarbon that has somewhere on its structure an isocyanate group – a double-bonded nitrogen, carbon and oxygen radical (\(-\text{N} = \text{C}=\text{O}\)). Diisocyanates have two of these active molecules. It appears the rule will apply to all isocyanates, not just those with two isocyanate groups, which is wise. However, it is the diisocyanates with a reactive group on both sides of the molecule that are the common monomers that link one to another or to other reactive groups to form a chain or mass polymer.

The regulations would limit the use of diisocyanates to applications in which they comprise no more than 0.1 percent of a product by weight, and call for more comprehensive training for workers who will be in contact with the substances. The 0.1 percent limit includes exemptions for situations in which there is very low potential for exposure or no relevant risk of occupational asthma. The 0.1 percent limit generalizes what had been the most restrictive limit on certain isocyanate compounds, and now will apply that limit to all isocyanates.