# WHERE ISOCYANATES ARE FOUND

Isocyanates are a group of chemicals which have been used for industrial purposes for more than 50 years, mainly for manufacturing of polyurethane plastics (PUR). Over the years, the use of PUR has widened considerably. PUR is nowadays found in for example foam, thermoplastics, fibers, adhesives, coatings and lacquers, foils and insulation materials.

When heating PUR to a temperature above 150 °C there is a risk of emission and exposure of isocyanates. Common scenarios include heating on surfaces treated with paints, varnishes or glue containing PUR. Other possible exposure scenarios are, for example, cutting and welding of PUR insulated steel pipes for district heating networks and hot work at car and sheet metal workshops. However, industrial production of polyurethane foam and paintwork can also entail significant health risks.

Even if there are no isocyanates in the product, isocyanates may still in some cases be formed during heating, such as when burning mineral wool or particle boards containing formaldehyde, phenol and urea. Both methylisocyanate (MIC) and isocyanate acid (ICA) can be formed under these circumstances.

Isocyanates are extremely toxic. The most critical effect of isocyanate exposure is the risk of developing isocyanate asthma. In many cases, there is also a development of hypersensitivity to air pollution and odors. Other serious effects are decreased lung function and skin allergies. Common symptoms include headache and respiratory problems such as nasal congestion, sniffing, nose bleeding or coughing. In many countries, isocyanates are subject to very low occupational exposure limits due to their hazardous properties.

We are one of the world's leading environmental, health and safety research and service organizations with a primary focus on techniques for sampling, monitoring and analyzing isocyanates and related amines. Occupational and industrial hygienists from all over the world have placed their trust in us for decades. Contact us today to discuss how we can help you with your occupational and industrial hygiene requirements.

Welcome to visit our website www.ifkan.eu for further information or send an e-mail to info@ifkan.eu and we will get back to you as soon as possible.

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# Examples of activities/industries where isocyanates occur

| Activity/industry | "Cold" handling | "Hot" handling |
|---|---|---|
| Automotive industry, ships, aircraft and trains | Painting, filling, sealing, windscreen assembly, bonding, manufacturing of composites, roof-liner pressing, acoustic panel processing, truck bed lining | Cutting, welding, grinding, windscreen removal, removal of underseal |
| Building | Sealing, bonding, painting, caulking, floor and wall coverings, insulation and roofing | Handling of mineral wool, mat welding, copper pipe welding, paint removal, pipe insulation |
| Clothing and leisure industry | Manufacture of PUR-textile, shoes and sports grounds and equipment | Flame lamination |
| Electrical and electronics | Packaging, gluing, casting | Soldering circuit boards, connecting optical fibres and varnished wires, cable insulation, heating Bakelite |
| Paint industry | Manufacturing, automotive and industrial painting | Removal of paints and varnishes with heat |
| Foundry | Manufacturing of cold-box cores | Manufacturing with hot-box technique, casting cores and shell sand |
| Graphic trades | Manufacturing of printing inks, lamination | Curing, lamination |
| Foodstuffs | Food packaging | Repair of conveyors, heat sealing of packaging materials |
| Plastics industry | Manufacture of foam, automotive fittings | Hot wire cutting |
| Tunnelling and mining | Sealing, rock consolidation | Self-ignition may occur |
| Wood and furniture | Manufacture of composite wood panels, use of adhesives, varnishing, upholstery padding, painting, panel board | Pressing, cutting and routing, removal of paints and varnishes with hot air gun |
| Engineering | Gluing, manufacture of elastomers, painting, insulation, fixatives | Repairs and removal of polyurethane materials with heat |
| White goods industry | Manufacture of refrigerators and freezers (PUR insulation), painting | Mineral wool insulation – Quality assurance (QA) checks, repairs |
| Medical care | Bandaging, casting, filling, equipment | |
| Fire extinguishing | | Mineral wool, polyurethane in furniture and interior fittings |

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