Weller®

ISOCYANATES

COOPER Tools

Background:
Isocyanates are from a family or group of substances used extensively in today's working environment. There are many variations of isocyanates with differing characteristics, but the commonality for these materials is that they all cause health problems, especially when they are inhaled.

The largest use for isocyanates is for manufacturing polyurethane plastics (PUR). PUR appears as compact or soft foam, and is also found in coatings and other chemical products where polyurethane is used. The use of PUR is increasing and makes up approximately 5 % of all plastics use today. When polymerizing and heating of PUR occurs, a number of isocyanate combinations are formed. When heating fenylformaldehyd resin, methyl isocyanates are formed.

Danger of isocyanates:
Isocyanates cause health hazards especially when inhaled in the form of gas, steam, dust or aerosol. Inhalation can cause irritation of the eyes, mucous membranes and respiratory system with symptoms resembling asthma or bronchitis and decreased lung function. There is a large risk of hypersensitiveness. Isocyanates can also cause skin irritation and with repeated contact, can cause eczema and in some cases other forms of skin allergies.

Isocyanates have a very low exposure limit. A person who is allergic to isocyanates can develop problems even when being exposed to concentrations below the hygienic limit value. Isocyanates have such a low exposure limit that a person may be exposed to dangerous proportions without recognizing it as the isocyanates do not show or smell at such low concentration levels.

Isocyanates in the electronics industry:
Recently new health hazards have been discovered with certain coatings, such as PUR coatings and some PUR glues that are used in the manufacturing and repair of printed circuit boards. The same risks occur when working with coated optical cables or coated wires that contain small amounts of PUR. When these materials are heated, isocyanates are formed in such high concentrations that it can cause occupational asthma. It is believed that the thermal segregation begins between 302 – 392°F (150 - 200°C). There are also strong reasons to suggest that isocyanates can be formed when heating resin products such as those used in solder flux formulations.

More information can be found at:
www.cooperhandtools.com/weller or at:
www.agius.com
Website of Dr Raymond Agius MD, DM, FRCP (Edin & Lond), FF OM
Department of Community Health Sciences,
The University of Edinburgh Medical School, Teviot Place, Edinburgh EH8 9AG
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