



Hardfacts

Norwich Union Risk Services

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Controlling Health Risks in the Electronics Industry

Introduction

One of the major health concerns in the electronics industry is exposure to fumes generated in soldering and electronic assembly processes. The rosin (colophony) fume generated from the fluxes used in core solders and the liquid fluxes used in dip soldering is a known respiratory sensitiser, which is liable to cause occupational asthma, rhinitis and conjunctivitis.

Health Risk Exposures

Core solders most widely contain rosin together with an amine hydrohalide activator. Liquid fluxes consist of rosin and activators dissolved in a suitable solvent, which may be either flammable or highly flammable. Binary solder alloys are most commonly based upon tin and lead. Ternary alloys comprise tin and lead plus one of the following: silver, indium, cadmium, copper or antimony. Solder creams are mixtures of pre-alloyed solder powders and fluxes comprising rosin, resins, solvents, activators and viscosity control additives.

The health risks associated with soldering operations include:

- rosin – flux fume: respiratory sensitisation and occupational asthma;
- metal related hazards;
- ignition of flammable solvent vapours;
- corrosive fluxes – liquids and fume;
- polyurethane enamelled wire soldering – toluene di-isocyanate fume;
- solvent handling – vapours, dermatitis, spillage procedures;
- solder bath cleaning;
- vapour phase soldering – toxic thermal decomposition products;
- solder creams – solvent discharge, fumes.

The Legal Position

The use of hazardous chemicals – including respiratory sensitisers – in the workplace are subject to the Control of Substances Hazardous to Health Regulations 2002 (as amended) (COSHH)

Under COSHH you must assess the risks to health arising from the use of hazardous substances at work and apply the 8 good principles which include:

- Assess the risks from substances hazardous to health.
- Decide what precautions are needed
- Prevent or adequately control exposure
- Ensure that control measures are used and maintained
- Monitor the exposure
- Carry out health surveillance if appropriate
- Put in place procedures for emergencies and spillage's
- Provide supervision, information, instruction and training to all employees.

Key Action Steps

- Ensure that all health risks to employees – especially respiratory sensitisers/occupational asthma – have been properly identified and assessed.
- Ensure that, wherever practicable, exposure to hazardous fumes are prevented, or if not practicable, are adequately controlled, ideally via total or partial enclosure of the fume generating process.
- If adequate control cannot be achieved, decide what alternative control measures are needed – local exhaust ventilation, personal protective equipment – and decide how to provide them.
- Maintain all control measures and ensure they are used.
- Monitor occupational exposure levels and compare with published standards, such as HSE Guidance Note EH 40: “Workplace Exposure Limits”.

- Provide health surveillance, as required.
- Provide necessary information, instruction and training.
- Review all COSHH assessments at least every five years.

Reference Documents

HSE Guidance Note EH 40 "Workplace Exposure Limits" – revised and published annually by HSE Books.

Control of Substances Hazardous to Health (Fifth edition) Approved Code of Practice and Guidance (L5.) HSE Books.

Medical aspects of occupational asthma. HSE Guidance Note MS 25 (second edition). HSE Books, 1998.

Breathe freely: Respiratory sensitisers and COSHH. IND G 95 (rev 2). HSE Books, 1995.

Preventing Asthma at Work: How to control respiratory sensitisers, L 55. HSE Books, 1994.

Breathe freely: a worker's information card on respiratory sensitisers. IND G 172. HSE Books, 1994.

HSE Books tel: 01787 881165.
email hsebooks@prolog.uk.com

COSHH Essentials: www.coshh-essentials.org.uk
NURS Hardfacts
6008: Control of substances Hazardous to Health Regulations
6010: COSHH Assessments

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Norwich Union Risk Services operates a Risk Helpline during normal business hours for the cost of a local telephone call. The telephone number is:
0845 366 66 66
www.nu-riskservices.co.uk