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COSHH Essentials in the Printing industry: Laminating printing

Using isocyanate-based adhesives

Control approach 2: Engineering control

The Control of Substances Hazardous to Health Regulations 2002 (COSHH) require employers to ensure that exposure is prevented or, where this is not reasonably practicable, adequately controlled. This guidance gives practical advice on how this can be achieved by applying the principles of good practice for the control of exposure to substances hazardous to health, as required by COSHH.

It is aimed at people whose responsibilities include the management of substances hazardous to health at work (eg occupational health specialists, anyone undertaking COSHH assessments, and supervisors). It is also useful for trade union and employee safety representatives. It will help you carry out COSHH assessments, review existing assessments, deliver training and supervise activities involving substances hazardous to health.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance, you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

See Essential information near the end of the sheet.

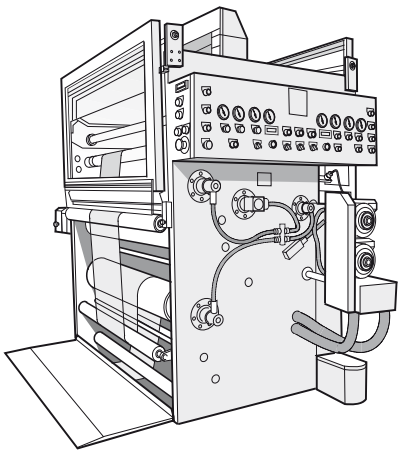
What this sheet covers

This sheet describes good control practice for laminating with isocyanate-based products.

It covers the key points to follow to reduce exposure to an adequate level. Follow all the points, or use equally effective measures.

Hazards

- Isocyanate-based products can cause asthma and skin allergies.
- Frequent contact with solvent-based substances used in printing processes can cause dermatitis, a common problem in the industry.
- Some of the solvent-based substances can be harmful if a high concentration of their vapour is breathed in. They can cause dizziness, drowsiness and other effects on the central nervous system.
- Some solvent-based substances can be absorbed through the respiratory system and skin causing harm elsewhere in the body, eg damage to the heart, the kidneys or reproductive system.
- Check safety data sheets for any workplace exposure limits.



An example of an application unit at a solvent-less adhesive laminating machine (note mechanically ventilated enclosure)

Access to work area

✓ Restrict access to authorised and appropriately trained people only.

Equipment and procedures

✓ Enclose the process as much as possible (see illustration) and provide extraction (also known as local exhaust ventilation or LEV).

✓ Set the extraction running before work begins, and keep it running for at least ten minutes after the job finishes.

- ✓ Where possible, site the work area away from doors, windows and walkways, to stop draughts interfering with the LEV and spreading the airborne contaminant.
- ✓ Provide an easy way of checking the LEV is working, eg airflow indicator or equivalent.
- ✓ Airflow must be sufficient to control airborne contaminants effectively. This will depend on the design, size of opening and the type of process and substance being controlled.
- ✓ Discharge extracted air to a safe place in the open air, away from doors, windows and air inlets.
- ✓ Wipe up dribbles and spills immediately. Decontaminate the wipes.
- ✓ Provide a good standard of general ventilation. Use powered wall- or window-mounted fans to supply fresh air, greater than five air changes per hour, with a through draught.

Caution: Avoid products containing HDI, IPDI or TDI – check the safety data sheet. If you do need to use an isocyanate-based product, choose one containing MDI, which is less volatile.

Respiratory protective equipment (RPE)

- ✓ RPE is normally not needed.
- ✓ RPE may be needed for maintenance and cleaning.

Personal protective equipment (PPE)

- ✓ Chemicals in **hazard group S** can damage the skin and eyes, or enter the body through the skin and cause harm. See sheets S100 and S101 for more specific advice. Check the safety data sheets to see what PPE is needed.
- ✓ Ask your supplier to advise on suitable PPE.
- ✓ Provide storage for PPE to prevent damage or contamination when not in use.
- ✓ Keep any PPE clean and replace at recommended intervals.

Gloves

- ✓ Follow any advice on the safety data sheet on suitable gloves, where there is a risk of skin contact. If no specific information is provided, single-use nitrile gloves, 0.2 mm thick are typically acceptable.
- ✓ Ensure that workers wear them.
- ✓ Tell workers to dispose of single-use gloves every time they take them off.

Other protective equipment

- ✓ Provide overalls to minimise clothing contamination.
- ✓ Tell workers to immediately change any heavily contaminated overalls (eg from spills) and ensure they are laundered before reuse.
- ✓ Use a contract laundry or a suitable equivalent to wash work clothing and tell them about the nature of the contaminants. Don’t allow workers to do this at home.

Personal decontamination and skin care

- ✓ Provide warm water, mild skin cleansers and soft paper or fabric towels for drying. Avoid abrasive cleansers.
- ✓ If hand cleansers are needed to remove ink, ensure workers rinse them off afterwards.

- ✓ Never allow solvents to be used for cleaning skin.
- ✓ Provide pre-work skin creams, which will make it easier to wash dirt from the skin.
- ✓ Provide after-work creams to replenish skin oils.

Caution: 'Barrier creams' are not 'liquid gloves' and they do not provide a full barrier.

Maintenance, examination and testing

- ✓ Keep all equipment used in the task in effective working order. Maintain it as advised by the supplier or installer.
- ✓ Check for signs of damage to control equipment before starting work.
- ✓ Check transfer hoses and connectors regularly for leaks.
- ✓ At least once a week, check that any airflow indicators work properly.
- ✓ Have equipment thoroughly examined and tested against its performance standard, at suitable intervals.
- ✓ For LEV a user manual or log book is helpful in setting out the frequency of checking, maintenance or parts replacement.
- ✓ For LEV with no user manual or log book, you may need the help of a competent person. They can determine the performance needed for adequate control.
- ✓ LEV systems require a statutory 'thorough examination and test' (TExT).
- ✓ Get a competent person to perform the TExT at least once every 14 months.
- ✓ Carry out all actions arising from the TExT.
- ✓ Several measures are available to check effectiveness of controls ranging from simple qualitative (eg smoke tubes, indicator tubes) to complex quantitative techniques (eg air sampling).
- ✓ Biological monitoring for isocyanates may be required. See sheet G408.

Cleaning and housekeeping

- ✓ Clean equipment and the work area daily. Clean other equipment and the workroom regularly, at least once a week.
- ✓ Store contaminated cloths, wipes and gloves in fire-resistant, closed metal containers. Dispose of them as hazardous waste.
- ✓ Store containers in a safe place, and dispose of empty containers safely.
- ✓ Put lids on containers immediately after use, even empty ones.
- ✓ Dispose of waste solvent and empty containers as hazardous waste.
- ✓ Deal with any spills immediately. Wear an impervious apron and new 0.4mm thick nitrile gloves. Contain or absorb liquids with granules or mats.
- ✓ Discard gloves once used. Dispose of granules/mats/cloths and gloves as hazardous waste.

Health surveillance

- ✓ Provide health surveillance for asthma where there is a reasonable likelihood that asthma may occur in your workplace. See sheet G402.
- ✓ Provide health surveillance for dermatitis where there is a reasonable likelihood that dermatitis may occur in your workplace. See sheet G403.

Training and supervision

- ✓ Provide supervision – ensure that safe work procedures are followed.

- ✓ Tell workers about the hazards associated with their work and how to recognise early signs of dermatitis.
- ✓ Provide workers with training on handling chemicals safely, when and how to use controls and how to check they are working. Also cover:
  - how the LEV system works;
  - how to use LEV to get the best out of it;
  - how to check the LEV is working; and
  - what to do if something goes wrong.
- ✓ Involve managers and supervisors in health and safety training.
- ✓ Training records are helpful to demonstrate training has taken place.

Essential information

S100 – General advice on chemicals causing harm via skin or eye contact.

S101 – Selection of personal protective equipment.

G402 – Health surveillance for occupational dermatitis.

G403 – Health surveillance for occupational asthma.

G408 – Biological monitoring for isocyanates.

Further Information

Safety data sheets

Controlling airborne contaminants at work: A guide to local exhaust ventilation (LEV), HSG258, HSE Books 2011, ISBN 9780717664153, www.hse.gov.uk/pubns/books/hsg258.htm

Managing skin exposure risks at work www.hse.gov.uk/pubns/books/hsg262.htm

Skin care and glove posters www.hse.gov.uk/printing/dermatitis/posters.htm

You can find the full COSHH essentials series at www.hse.gov.uk/coshh/index.htm

Occupational Safety and Health Consultants Register www.oshcr.org/

http://www.hse.gov.uk/skin/

http://www.hse.gov.uk/printing/

For information about health and safety, visit https://books.hse.gov.uk or http://www.hse.gov.uk

To report inconsistencies or inaccuracies in this guidance, email: commissioning@williamslea.com

Employee checklist

- ☐ Make sure any extraction is switched on and working.
- ☐ Look for signs of leaks, wear and damage before every job.
- ☐ If you find any problems, tell your supervisor. Don't just carry on working.
- ☐ Wash hands before eating, drinking, smoking, using the lavatory and after work.
- ☐ Use warm water and mild cleansers to wash your skin. Don't use solvents.
- ☐ Clean up leaks and spills immediately.
- ☐ Use, maintain and store your PPE in accordance with instructions.
- ☐ Discard single-use gloves every time you take them off.
- ☐ Don't use damaged gloves.
- ☐ Care for your skin as instructed.
- ☐ Check your skin regularly for dryness and soreness – tell your supervisor if these appear.