Painting by spraying

Control approach R
Respiratory protective equipment

What this sheet covers
This sheet describes good practice for mixing and spraying solvent-based paint but does not apply to water-based paint. It covers the key points you need to follow to help reduce exposure to an acceptable level, as part of your COSHH assessment.

Hazards
✓ Exposure to solvent vapours may result in a number of health effects, eg the central nervous system, irritation of eye, skin and respiratory system.
✓ Reactive products (eg epoxy and isocyanate-containing paints) may cause asthma by breathing in paint mist. They can also cause dermatitis by skin contact.

Access
✓ Make a specific assessment where rope work or over-side work is required.
✓ Where possible, erect an enclosure or habitat.
✓ Otherwise, erect barriers and notices.
✓ Restrict access to authorised personnel.
✓ Where necessary post a stand-by or sentry to raise the alarm in an emergency.
✓ Where possible have a ventilated enclosure/habitat.

Storage
✓ Provide a well-ventilated, flameproof store with spill containment and spill clean-up kits.
✓ Segregate incompatible materials, and segregate waste.
✓ Minimise the amount of product stored.
✓ Keep lid on containers when not in use.
✓ Provide eyewash equipment close to the work site.
✓ Provide appropriate firefighting equipment.
✓ Label and segregate waste.
Equipment and procedures

Mixing and cleaning
✓ Designate a room for paint mixing. This may be the paint store.
✓ Wire in the room ventilation with lighting circuit to provide good standards of general ventilation.
✓ Discharge extracted air outside the building, away from walkways and air inlets.
✓ Always open cans and mix paints inside the room.
✓ Clean mixing equipment as soon as possible after use.
✓ Spray guns contain paint residues. Clean them only in dedicated enclosed and extracted gun washing equipment.
✓ If this is not possible, use air-fed breathing apparatus for spraying washings in extracted booth or room with the extraction turned on.

Spray painting.
✓ Provide ‘compliant’ spray guns that minimise paint mist.
✓ Measure the clearance time for the habitat (if provided).
✓ Set the habitat extraction running before spraying begins. Keep it running for at least the clearance time after spraying.
✓ Ensure that air-fed breathing apparatus is worn for spraying and that the users check it works properly every time they use it.
✓ Workers must keep their breathing apparatus in until they have left the habitat.

Respiratory protective equipment (RPE) – see OCM4
✓ Provide air-fed CE-marked RPE with an assigned protection factor of at least 20. Use either an air-fed half-mask with a visor (LDM2) or an air-fed visor (LDH3). Provide dedicated connectors to prevent accidental connection to non-breathing lines, eg nitrogen.
✓ Provide a disposable cover to protect the visor from spray.

Other protective equipment
✓ Provide disposable coveralls. Discard these at the end of the shift.
✓ Provide chemical resistant gloves, eg nitrile. Single-use gloves are preferred.
✓ Tell workers to discard single-use gloves every time they take them off.

Caution: ‘Barrier creams’ or ‘liquid gloves’ do not provide a full barrier and should not be used as an alternative to properly selected protective gloves.

Maintenance, examination and testing

Checking and maintenance
✓ Keep all equipment in effective working order – follow instructions in user manuals.
✓ Before use, check the air lines for supplied-air breathing apparatus.
✓ At least once a week, check that airflow indicators work properly.
✓ At least once a month, check that the gun cleaning equipment is working properly.
✓ Keep this information in your testing logbook.
Examination and testing
✓ Extraction systems require statutory ‘thorough examination and testing’ (TExT).
✓ Get a competent ventilation engineer to perform the TExT at least once every 14 months (see HSE publication HSG258).
✓ Carry out all actions arising from the TExT.

RPE
✓ Examine and test RPE thoroughly at least monthly and infrequently used RPE at least three monthly. Replace worn parts.
✓ Check the airflow and air quality to air-fed RPE at least once every three months, or before use. Check in-line filters.
✓ Ensure that breathable air compressors take in clean air.

Records
✓ Keep records of all examinations and tests for at least five years.

Exposure monitoring
✓ Prove that you are using the right level and type of RPE – use monitoring records or carry out personal air monitoring.
✓ Biological monitoring is needed to monitor RPE effectiveness when spraying isocyanate-based products.

Cleaning and housekeeping
✓ Clean the mixing and spraying equipment with any extraction turned on.
✓ Clean the area after the task, or as specified in working procedures.
✓ Keep a small spill clean-up kit nearby during painting.
✓ Deal with spills immediately – use air-fed RPE for large spills of hardener.

Waste
✓ Decontaminate all epoxy and isocyanate residues, including empty hardener containers. The safety data sheet should give a decontaminant recipe.
✓ Dispose of waste paint and thinner as ‘hazardous waste’

Personal decontamination and skin care
✓ Provide warm water, mild skin cleansers, nailbrushes, and soft paper, fabric towels or hot air for drying. Avoid abrasive cleansers.
✓ Instruct workers in how to clean their skin effectively.
✓ Tell workers to wash hands before every break.
✓ Provide pre-work skin creams, which will make it easier to wash dirt from the skin, and after-work creams to replace skin oils.

Caution: Never use thinners to clean skin.

Health surveillance
✓ Conduct high-level health surveillance for asthma where products are classified with a ‘respiratory sensitisier’ hazard.
✓ Conduct low level health surveillance for dermatitis involving skin checks by suitably trained responsible person.

Employee checklist
☐ Are you sure about safe work procedures?
☐ Is the stand-by person in place?
☐ Is the equipment in good condition and working properly?
☐ Is the extraction working?
☐ Is your respirator working properly? Check it every time.
☐ Do you have a spill clean-up kit handy?
☐ Look for signs of wear and damage to equipment.
☐ If you find any problem, get it fixed. Don’t just carry on working.
☐ Co-operate with health surveillance.
☐ Discard single-use gloves every time you take them off. Discard other gloves at the end of the shift.
☐ Wash hands before eating, drinking or using the lavatory.
Training and supervision

- Provide supervision – ensure that safe work procedures are followed.
- Tell workers, including maintenance workers, what the hazards and risks are.
- Explain the early signs of asthma and dermatitis.
- Training includes toolbox talks on:
  - following safe working procedures;
  - how to use equipment properly;
  - how to check that extraction is working properly;
  - how to use RPE and check that it is working;
  - how to clean up spills correctly; and
  - what to do if something goes wrong.
- Involve managers and supervisors in health and safety training.

Essential information

- OCE0 Advice for managers
- OCM2 Local exhaust ventilation (LEV)
- OCM3 Personal protective equipment (PPE)
- OCM4 Respiratory protective equipment (RPE)
- OCM5 Emergency planning
- OCM7 Health surveillance

Other hazards

- Substances harmful to the marine environment

Further information

- Respiratory protective equipment at work: A practical guide HSG53 (Third edition)
  HSE Books 2005
  ISBN 978 0 7176 2904 6
  www.hse.gov.uk/pubns/books/hsg53.htm

- Controlling airborne contaminants at work: A guide to local exhaust ventilation (LEV)
  HSG258 HSE Books 2008
  ISBN 978 0 7176 6298 2
  www.hse.gov.uk/pubns/books/hsg258.htm

- Urine sampling for isocyanate exposure measurement
  G408 www.hse.gov.uk/pubns/guidance/g408.pdf

- Workplace exposure limits EH40
  www.hse.gov.uk/coshh/table1.pdf

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

This guidance was developed by representatives from the UK offshore oil and gas industry and trade unions, with HSE.