

Work year 2007/2008: Inspection programme for premises carrying out soldering

SIM 3/2007/05

Target Audience:

Band 4 Inspectors and HSAOs, Specialist Inspectors (Occupational Hygiene)

Date issued: 2007-02-16	OG Status: Fully open
Review date: 2011-02-16	Author Unit/Section: Manufacturing Sector

Summary
Background
Action required
Targeting
Resources
Sector support
Start and completion dates
Recording
Health and safety
Further advice
Sector contacts

Summary

This SIM identifies the action required to look at the types and adequacy of fume control in use for hand soldering, assess users' understanding of good practice, assess the risks posed by exposure to solder fume and carry out enforcement action to achieve adequate control.

Background

- 1 Over a thousand people contract occupational asthma (OA) each year in the UK. Exposure to rosin based solder fume is a significant cause of OA - it was the fourth most common cause in 2005. Rosin based solder flux fume has a WEL of 0.05 mg.m^{-3} , and exposure must be reduced as low as reasonably practicable because it is an asthmagen.
- 2 A National Project was established four years ago aimed at reducing the risk of respiratory illness from exposure to solder fume. HSE has been working with suppliers to improve the information given with solder products and extraction equipment. HSE guidance for employers and employees on good practice control of solder fume has been available for many years, and e-COSHH sheets now support this.
- 3 In recent years the UK industry has undergone major changes:
 - The industry has experienced a severe contraction, with assembly work being moved abroad. Anecdotally, this has left behind small-scale 'craft' work (e.g. repair of hearing aids or manufacture of high specification hi-fi), and large electronic producers. The latter use mechanised soldering methods, but have some hand soldering to repair defective product - known as rework.
 - The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Regulations, which came into force in July 2006, require the removal of lead from solders. Users have often picked up the idea that 'lead free' equals 'risk free'. This is not the case as rosin is frequently used as a fluxing agent and, as these solders have a higher melting point, produce considerably more fume.

- Some solder manufacturers have introduced rosin free fluxes. Again, users tend to think that these are risk free. Rosin is either replaced by 'modified rosin', which has the same asthmagenic properties as rosin, or by acidic compounds which generate an irritant fume. Although this fume will not cause occupational asthma, it still requires control.
- The Waste Electrical and Electronic Equipment (WEEE) Regulations are expected to come into force during 2007. These regulations will require recycling of this equipment, and this will largely be the responsibility of the original manufacturer. This often involves removal of soldered joints, a process known as 'desoldering'. If rosin based flux was used in the original manufacture, it will be contained in the fume generated by desoldering. This fume requires the same control as solder fume.

Action required

4 HSAOs to identify and visit 224 premises nationally where soldering is likely to be undertaken, and to use a question set (to be supplied) to question users about the amount of manual (hand) soldering that they do, the type of solder and flux used, whether they are aware of the risks posed and an assessment of any control measures in place, and whether there have been any incidence of respiratory ill health.

5 Where the questionnaire indicates there is significant soldering and controls are not adequate, or users report respiratory health effects, HSAOs should request a visit be paid by Band 4 inspector to provide advice and/or further enforcement action if necessary.

6 Band 4 inspectors should initiate enforcement action (in accordance with the HSC's EMM and EPS) where there is a significant risk of ill health effects, in line with guidance contained in the inspection topic pack. Any enforcement action taken may need to reflect the new emphasis in Regulation 7 of COSHH to apply the principles of good control practice when controlling exposure to substances hazardous to health – see Schedule 2A of the Regulations for details

Targeting

7 Unfortunately no reliable database of companies that undertake soldering currently exists. Soldering can be found in a range of SICs covering the manufacture of electrical equipment. Typically these include 300100, 300200, 311000, 312000, 313000, 315000, 316100, 316200, 321000, 322010, 322020, 323000, 331000, 332010, 333010, 334030 and 334040. Searches on web based directories (e.g. yell.com, scoot.co.uk) for electronics repair, etc. may also help identify premises.

8 The total number of incumbents recorded historically on Focus for the above SICs, by Area, are:

Area	01	02	03	05	06	07	08	09	10	11
Total	963	1193	910	273	421	748	652	388	652	616
Area	12	13	14	15	16	17	18	19	20	21
Total	479	464	241	397	595	385	327	396	433	390

The DRP and sector are currently working to provide better targeting information – possibly a list of premises that are known to undertake soldering/de-soldering work.

Resources

9 HSAOs are asked to visit 224 premises nationally referring on to a Band 4 where conditions are poor and/or enforcement action is envisaged. The FOD Delivery Plan confirms the resource allocation by division.

Sector support

10 Before the project commences Manufacturing Sector will provide the question set (Appendix 3 of the topic pack) for HSAOs and an updated topic pack for Band 4s.

11 During the project Manufacturing Sector is available to answer queries, particularly on information provided by solder or extraction suppliers.

Start and completion dates

12 All visits should be completed and recorded by the end of 2007/08 work year.

Recording

13 COIN recording details will be notified by FOD

14 This initiative will be supported by the revised Rosin based solder topic pack, and an aide memoire (Appendix 3 of the topic pack) with questions and examples of good/ bad practice. No formal training is planned but is hoped that HSAOs will be provided with a face-to-face briefing on this work in April/May.

Health and safety

15 The main area of concern for visiting staff is breathing rosin based solder fume, which is normally clearly visible rising from the workpiece or soldering iron. The Health and Safety Supplements relating to general site visits are available on the Intranet under 'Your Health and Safety'.

Further advice

16 The following current HSE published advice should assist visiting staff:

- Asthma web pages
- Relevant e-COSHH page
- Breathe Freely (guidance on Health surveillance), ISBN 0717607712
- Free leaflets on solder (INDG 248 & 249)

Sector contacts

17 Further information can be obtained from Sarah Haynes, Manufacturing Sector Tel. 0191 202 6224. VPN 519 4243. Email: sarah.haynes@hse.gsi.gov.uk