

**ALG Memo 1/05**  
**Asbestos Licensing Unit**

**To:** Members of the Asbestos Liaison Group

**From:** Trevor Johnson  
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**Date:** 18 May 2005

**Subject:** **Asbestos Containing Arcshields used in Electrical Switchgear**

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1. HSE's Scotland Specialist Group (SSG) recently investigated hazards and risks associated with maintenance and servicing of electrical switchgear containing asbestos arcshields. The purpose of investigating this work situation was to inform the wider industry on the risks involved and to identify the procedures and controls that should be employed in such situations.
2. The information from this investigation showed that the particular arcshield used had a density of around 2 tonne/m<sup>3</sup>. As the Asbestos (Licensing) Regulations 1983 as amended define asbestos cement as "a material which is predominately a mixture of cement and asbestos and which when in a dry state has a density greater than 1 tonne per cubic metre", the material was classed as asbestos cement. Therefore any work with this type of material did not require an asbestos licensed contractor. However all asbestos work must be carried out in accordance with the Control of Asbestos at Work Regulations 2002.
3. The SSG have drawn up an "Asbestos Essentials" type of approach to this activity where the asbestos containing material comes under the definition of asbestos cement. The system of work that should be adopted is contained in the attached annex.
4. As this information could be useful to others, it has been decided to produce it as an ALG memo, which will be available shortly on HSE's website.

Trevor Johnson

## ANNEX

### 1. What are arcshields?

Arcshields can be found in switchgear that is used in virtually any industrial or commercial premises that require a high voltage supply of electricity. (A diagrammatical figure of an arcshield and photographs are shown in Figures 1 to 3). Arcshields provide an insulating barrier in electrical switchgear, which prevents flashover between phases when the circuit breaker is activated. Asbestos continued to be used in arcshields until the mid 1980s. Typically the arcshield components contain up to 50% chrysotile asbestos (ie the arcshield and separator plates may contain ~20% and ~50% respectively) and have a density greater than 1 tonne/ m<sup>3</sup>. The extent of activation will depend on the use pattern for the parent machine or equipment. The degree of deterioration of the asbestos material will be related to the extent of activation and flashover. The asbestos material may suffer surface deterioration or scorching and possibly become cracked or broken in extreme cases.

This guidance applies to situations where it has been established that asbestos arcshields are present. It should be assumed that all equipment manufactured before the mid 1980s contains asbestos. The client may be able to provide information that the asbestos arcshield has been replaced.

The guidance does not apply to work where arcshields are being replaced.

### 2. What does maintenance and servicing work involve?

The work activity involves primarily visual inspection of the condition and lifting/handling of the arcshield unit as part of a wider maintenance procedure. Asbestos is not being removed or undergoing any direct insult such as drilling or cutting. However as there is likely to be some loose (albeit minor) asbestos containing dust on the arcshield components, there is the potential for asbestos dust to contaminate hands (or gloves) by direct contact and the potential for spread of dust through movement of the drawer unit or lifting out the arcshield. The amount of dust will to a large extent depend on the condition of the arcshield. Larger amounts of dust or even debris will be expected where there is more physical damage or surface deterioration. This will increase the potential for exposure and spread.

### 3. Suggested Procedures for Dealing with Asbestos Arcshields (which come under the definition of ASBESTOS CEMENT)

Electrical Warning: Prior to undertaking any examination of electrical equipment, please ensure that an electrically competent person has made the electrical equipment safe by isolating it from all sources of electrical supply. Advice on electrical safe working procedures is available in HSE Guidance Note HSG85: Electricity at Work-Safe Working Practices.

#### (1) Training

People carrying out any work on asbestos materials should be properly trained and supervised. Training should include the following topics:

- The effects asbestos can have on your health, including the added danger of smoking;
- What the Control of Asbestos at Work Regulations 2002 (CAWR) requires you to do;
- Work methods and equipment you need to use to do the task properly. The correct choice, use and maintenance of personal protective equipment;
- Decontamination procedures.

#### (2) Personal Protective Equipment (PPE)

- Wear boots without laces eg rigger type (laced boots can be difficult to clean);
- Wear type 5 disposable coveralls (wear one size too big – this will prevent ripping at the seams);
- Wear the hood over the straps of the respirator and trousers over the boots;
- Wear disposable surgical gloves for any direct handling of the asbestos arcshield.

### (3) Respiratory protective equipment (RPE)

- The respirator should fit the wearer and be suitable for the task including work with asbestos;
- The operator should have successfully passed a face fit test for the specific respirator;
- The operator needs to be clean-shaven;
- A disposable particulate respirator (FFP3) will normally be adequate.

### (4) Work Methods

- The work method should minimise the exposure to asbestos fibre and include the following steps:
  - Carry out the work with the minimum number of people present.
  - Restrict access, eg close the door and/or use warning tape and notices.
  - Put on PPE and RPE and check RPE is properly fitted.
  - Open up the switchgear drawer carefully.
  - Assume any dust or debris around the arcshield is asbestos. Preclean using a Type H vacuum and impregnated rags (eg Takrags) to clean the surfaces around the arcshield. Place Takrags into a polythene waste bag
  - Use polythene sheeting, secured with duct tape, to cover surfaces within the switchgear unit/area which could become contaminated eg over switchgear components.
  - Sheet over any table or surface on which the arcshield may be placed. Shadow vacuum the screws and bar during removal of arcshield retaining bar.
  - Handle the arcshield carefully.
  - On completion of work and after reinstatement of the arcshields, use the Type H vacuum and takrags to clean the surfaces around the arc shield.
  - Place debris, used rags, polythene sheeting and other waste in the waste bag.

### (5) Clearance procedure

- Visually inspect the area to make sure that it has been properly cleaned.

### (6) Personal Decontamination

- Remove your respirator last.
- Clean your boots with wet rags.
- Use the Type H vacuum cleaner to clean your overalls.
- Otherwise use a wet rag – using a ‘patting’ action – rubbing can disturb fibres.
- Where two or more workers are involved they can help each other by ‘buddy’ cleaning.
- Remove overalls by turning inside out – place in asbestos waste bag.
- Remove gloves by turning inside out – place in asbestos waste bag.
- Disposable respirators can then be removed and placed in the asbestos waste bag.

## Figure 1

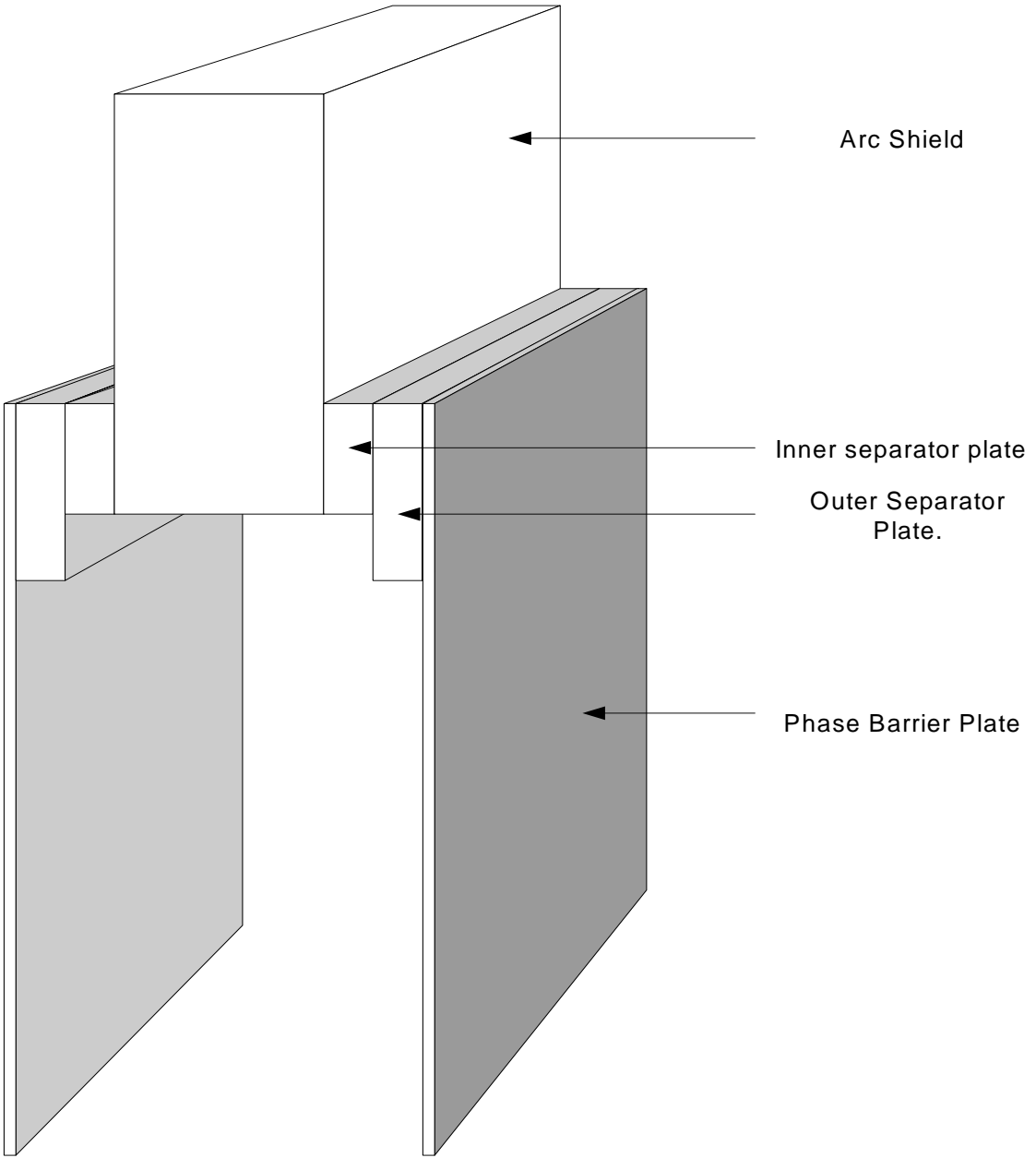


Figure 2

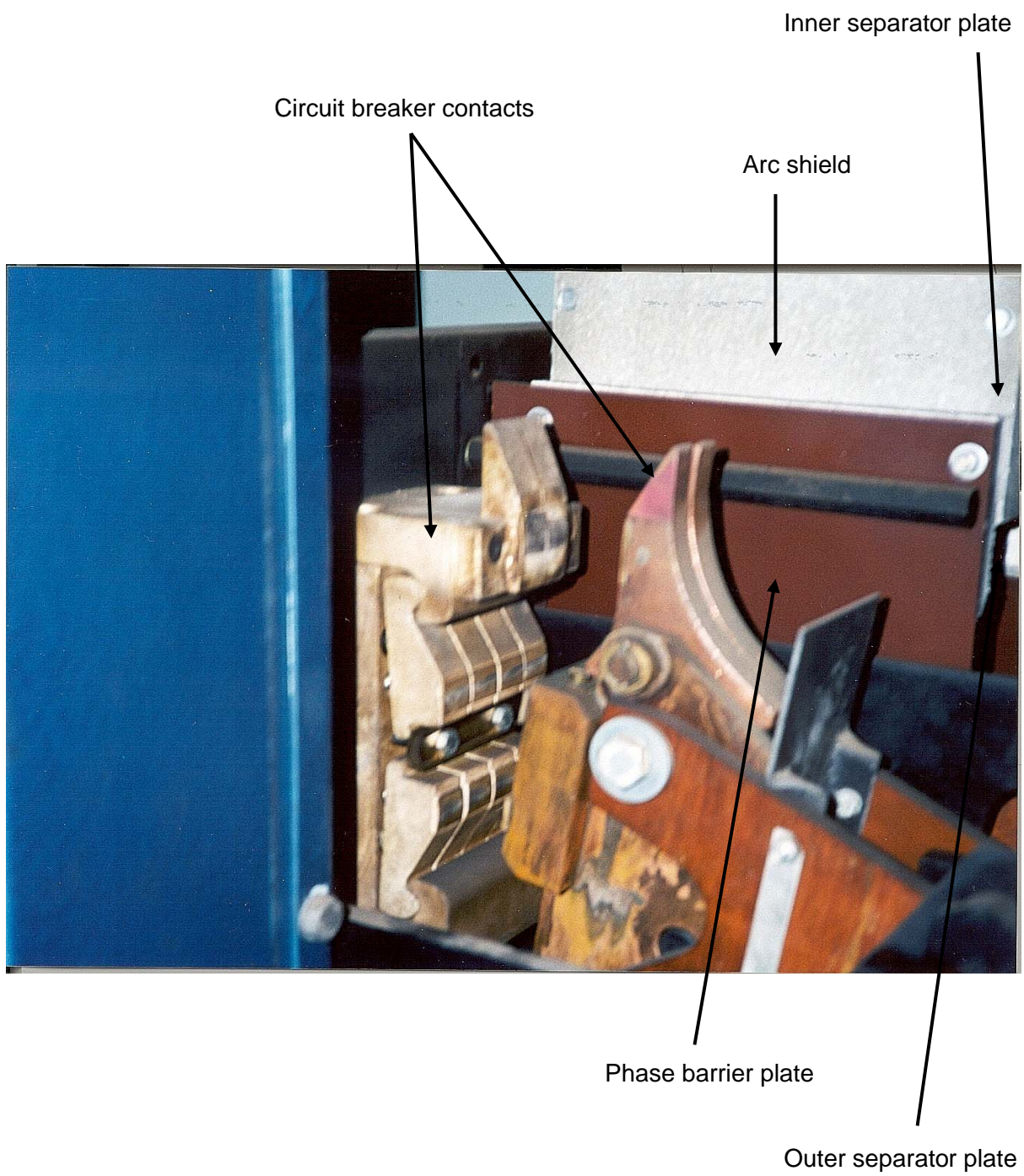


Figure 3

