# Nickel and Nickel Alloy Plating Operations:
## Controlling the Risk of Skin Exposure

### Health Risks

Skin contact with nickel and the nickel salts used in plating operations can cause skin sensitisation. Nickel is a potent skin sensitiser and most cases of nickel allergic dermatitis result from body piercing. Estimates vary but around 1% of men and 10% of women in Britain are allergic to nickel. It does not matter how you came to be sensitised to nickel - once sensitised, any further exposure puts you at risk of an allergic reaction.

Dermatitis in a nickel plater

### Control

The Control of Substances Hazardous to Health (CoSHH) Regulations 2002 require that skin exposure to nickel and nickel salts is prevented or adequately controlled at work.

You need to identify processes where skin may be exposed to nickel or nickel compounds including:

- unjigging operations,
- loading and unloading manual plating lines,
- contact with contaminated surfaces or control dials, buttons, levers and switches,
- preparing and making additions to plating solutions,
- testing plating solutions,
- disposing of bags that contained nickel salts,
- cleaning up dry or wet spills of plating solutions, and
- plant maintenance activities such as cleaning tanks, replacing filters and loading anode cages.

A safe system of work that addresses the skin exposure risks should be devised and documented. Modifications to consider include:

- pumping rather than pouring liquid tank additions,
- restricting access to the plating line,
- providing impermeable, easy-to-clean work surfaces,
- top sprays rinsing the work on the flight bar to reduce the build up of nickel salts and,
- dealing with spills immediately - preferably using a suction device.

If nickel exposure cannot be prevented, eating, drinking and smoking should be prohibited in areas that may be contaminated and floors, walls and other surfaces should be cleaned at regular intervals and whenever necessary. Surface contamination can be checked with a surface sampling test kit. Searching on "nickel test kit" in your internet search engine should generate a list of suppliers.

### The Role of Personnel Protective Equipment

Gloves should only be used as a last resort after other measures to prevent or control exposure have been employed and where there is still a residual risk. Where this is the case and when dexterity is required, 0.4 mm nitrile gloves to BS EN 374 standard should be suitable. These can only protect for up to eight hours. For short jobs, single-use gloves (eg 0.1 or 0.2 mm thick) may be more appropriate. These should be replaced each time they are removed. The correct way to remove this type of glove without contamination is shown in the Appendix, Figure 1. If protection against abrasion or sharp edges is needed, thicker gloves to BS EN 374 and BS EN 388 standards should be used. Where reusable gloves cause hand sweating, reusable cotton or silk liners may be appropriate. These not only keep the skin in better condition, but also facilitate glove removal without contaminating the skin. Figure 2 in the Appendix shows how to remove reusable gloves that have only been used for a short period of time. Using gloves to control exposure to nickel can only be effective if supported by a suitable glove programme which addresses:

- selection as part of the risk assessment for the process,
- use,
- storage,
- disposal, and
- training.

Eye protection to BS EN 166 standard or a full-face visor should be provided where there is a risk of splashing. Overalls should be worn and replaced or laundered if they become contaminated and at least once per week. Make sure that forearms are covered. An impervious apron is usually necessary for a manual line. Suitable accommodation, such as a lockable locker, should be provided for each worker's personal protective equipment (PPE). A suitable changing room should also be provided.

See the HSE publication HSG205 for further information.

### Facilities for Rest, Meals and Washing

Washing facilities with wash stations having running hot and cold or warm water are essential. Soap and towels should also be provided and the facilities should be kept clean and tidy.

Facilities for resting and eating food are also required because food eaten in the workplace could become contaminated with nickel. Eating facilities should include a means of obtaining a hot drink and should also be kept clean and tidy. On leaving the plating area (to go to the rest room, office etc) PPE should be removed and appropriately stored.

### Skin Care

Workers need to ensure that their hands are kept clean and in good condition. Using pre-work creams may help to make removing nickel easier. They do not provide an effective barrier, and are not a substitute for gloves. After-work creams are particularly beneficial because they help restore the natural moisture content of the skin after washing hands.

See the HSE publication HSG207 for further information.

### Emergency Showers and Eye-wash Stations

Emergency showers and eye-wash stations are recommended because of the hazards associated with other chemicals used in the plating shop. Typical water flow rates for showers and eye-wash stations are 75 l/min and 1.5 l/min respectively. Other requirements are:

- there should be a sanitary water supply,
- shut-off valves between the water supply and the equipment should be secured in the open position, and
- routes to and the area around the equipment should be kept clear.

### Health Surveillance

All employees exposed or liable to have their skin exposed to nickel must be under suitable health surveillance. An occupational health professional needs to be involved in drawing up your health surveillance programme. You should appoint a responsible person to carry out the checks. This can be one of your own employees but they will require some simple training by an occupational doctor or nurse. As a minimum your health surveillance should include the following measures:

- assessing the skin condition of the employee as soon as possible after they are initially employed,
- inspecting employees' hands, forearms, face and neck at least every month and administering a questionnaire annually,
- having any abnormal results referred to you so that you can arrange for them to be interpreted by your occupational health provider,
- ensuring that the employees are aware that they should inform the responsible person of any symptoms that occur between checks, so that this can be referred to the occupational health provider, and
- keeping a health record.

The health record should include:

- the activity that can cause dermatitis,
- the worker's name, address and National Insurance number,
- the process that they work on and how often,
- the protective measures provided,
- the date of starting work,
- the results of the skin inspections, and
- the summary on fitness (or otherwise) received from the occupational health provider.

A suitable record sheet for skin inspections is included in the Appendix. Occupational doctors and nurses can be found via the Society of Occupational Medicine (www.som.org.uk) or in Yellow Pages under "Health and safety consultants" and "Health authorities and services". Other information sources for locating occupational health professionals include NHS Plus (click on the relevant part of the map at www.nhsplus.nhs.uk/local_unit/index.asp) or using an internet search engine with the phrase "occupational health provider".

For further information see COSHH essentials guidance sheet G403 and HSG61.

### Information, Instruction and Training

Employees should be told about:

- the symptoms of dermatitis,
- who they should immediately report symptoms to,
- the safe system of work,
- the glove programme, and
- the collective results of any health surveillance.

Induction training for new employees should cover:

- the correct use and maintenance of control measures,
- the work practices which prevent or reduce exposing the skin to nickel, and
- the emergency procedures, particularly the emergency showers and eye-wash stations.

Information, instruction and training should be reviewed and updated whenever there are significant changes to the work. Consider summarising and documenting the key points, laminating the resulting page or pages and displaying them at appropriate points in the plating shop.

## Further Information

***Assessing and managing risks at work from skin exposure to chemical agents*** HSG205 HSE Books 2001 ISBN 0 7176 1826 9

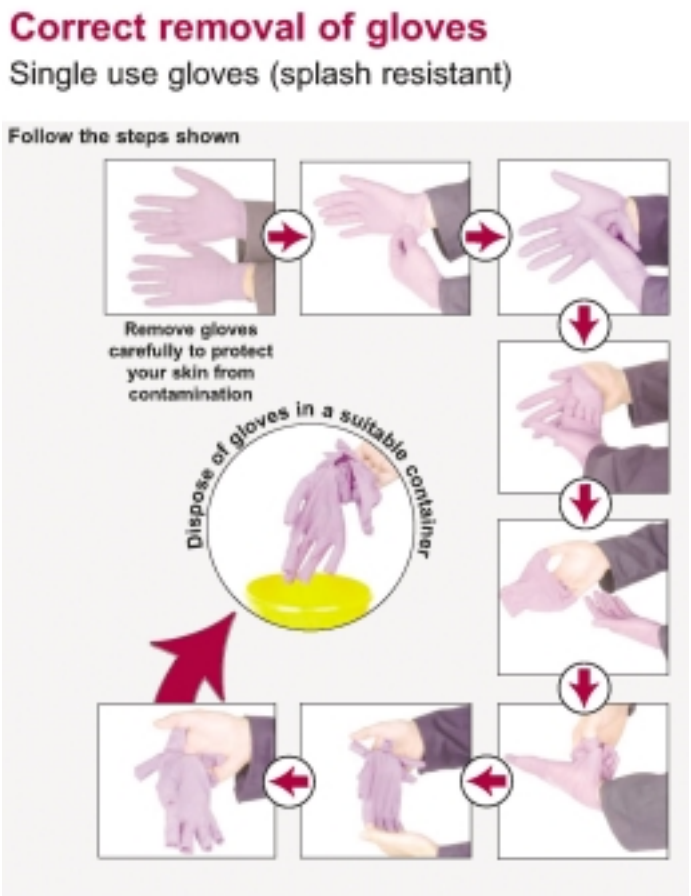
***Choice of skin care products for the workplace*** HSG207 HSE Books 2001 ISBN 0 7176 1825 0

***Health surveillance for occupational dermatitis*** COSHH essentials guidance sheet G403 HSE 2006 Web only version available at www.hse.gov.uk/pubns/guidance/g403.pdf

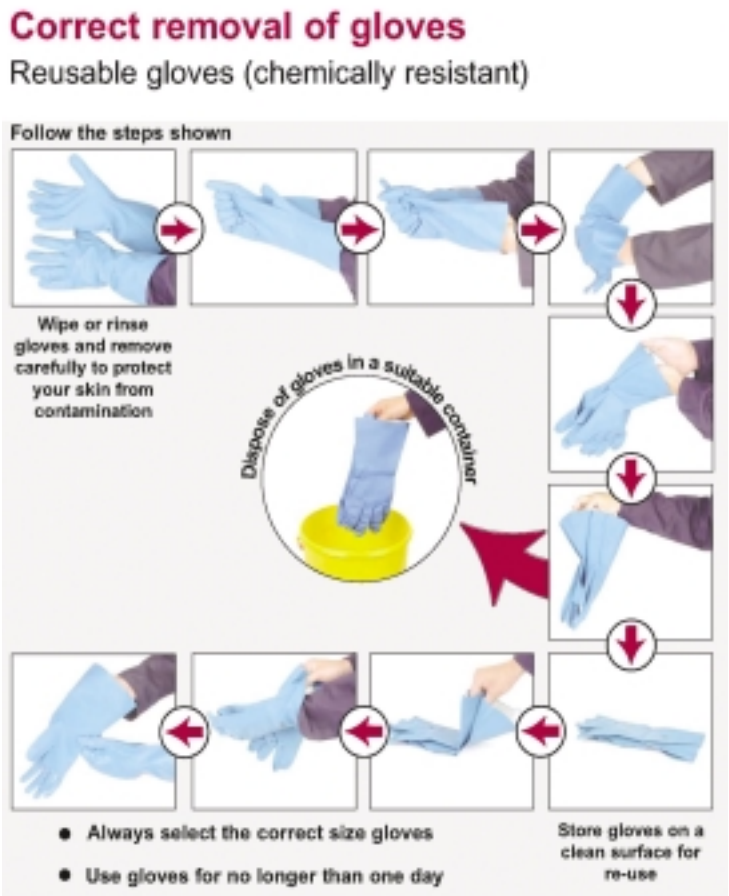
***Health surveillance at work*** HSG61 HSE Books 1999 ISBN 0 7176 1705 X

## Appendix

### Fugure 1




### Fugure 2



# Record of Skin Inspections

Name of Employer _____

Address of works _____

_____

Enter records of inspection in columns, dating and initialling them and using the following symbols:
**O** No Comment
**K** Some injury or cuts
**R** Referred to the employer (serious skin condition, eg ulcer, dermatitis) - where this entry is made the responsible person should bring it to the attention of the employer.

| **List of persons employed in process** | | | | **Particulars of examination by responsible person** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Employee's Name (in full) Address inc post code National insurance No. | M/F | Other jobs in Co. requiring health surveillance (if any) | Date started present employment | Date | Date | Date | Date | Date | Date | Date | Date | Date |
| | | | | Result | Result | Result | Result | Result | Result | Result | Result | Result |
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