

# GLUTARALDEHYDE

This information sheet explains the effect of a maximum exposure limit for glutaraldehyde and actions employers need to take to comply with COSHH.

This information sheet explains the effect of a maximum exposure limit (MEL) for glutaraldehyde and outlines what action employers will need to consider taking to comply with the Control of Substances Hazardous to Health Regulations 1999 (COSHH).

## WHAT IS GLUTARALDEHYDE?

Glutaraldehyde is a powerful cold disinfectant most commonly used for disinfecting heat sensitive instruments such as endoscopes and other medical and dental instruments.

It is also used in radiology and as glue when studying microscopic specimens. Its trade names include: Cidex, Totacide, Coldspor, Sporocidin, Wavicide, and Asep. As a disinfectant, it is cheap to buy, effective, fast acting, and therefore convenient.

## WHAT'S THE PROBLEM WITH GLUTARALDEHYDE?

Glutaraldehyde is also a volatile irritant and sensitizer. Exposure to the liquid or vapour can irritate: the skin, eyes, throat, and lungs; and sensitise the skin and respiratory system. Headaches, nausea, and vomiting may also occur.

Irritation can occur after repeated exposures or from a single acute exposure, and the reaction need not be

immediate, it can be delayed. Once sensitised, exposure to even a very small amount can cause: dermatitis (allergic reactions to the skin), rhinitis and conjunctivitis (the inflammation of membranes in the nose and around the eyes), and asthma (a respiratory disorder characterised by breathing difficulties).

Moreover, there may be few career options left open to someone who has become sensitive to glutaraldehyde since it can be found in: car fumes, solvents, perfumes, and photocopying materials.

## EXPOSURE LIMITS

In 1998, the occupational exposure limit (OES) for glutaraldehyde was withdrawn and a MEL is now in effect.

A MEL is set either: where a substance may cause the most serious health effects such as asthma and there is no considered safe level of exposure (as with glutaraldehyde); or where in the case of a potentially safe chemical (given current scientific knowledge) it is not reasonably practicable to keep exposure below an OES (that is the safe level of exposure to the chemical). The MEL for glutaraldehyde is 0.05ppm/0.2mg.m<sup>-3</sup> for both long term exposure (that is averaged over 8 hours) and for short term exposure (that is 15 minutes). With the setting of a

MEL, the control of exposure will now only be treated as being adequate if exposure levels are reduced below the limit as far as is reasonably practicable. Exposures above the limit are illegal.

## WHAT ARE THE IMPLICATIONS FOR THE HEALTHCARE SECTOR?

The introduction of the MEL means that employers must now review and revise where necessary, their COSHH assessments on glutaraldehyde, and the steps taken to comply with the COSHH Regulations.

COSHH requires employers to prevent exposure to glutaraldehyde where reasonably practicable, and where not, to control exposure to as low a level as possible – ensuring that the number of people exposed and the duration of exposure are minimised.

The Health and Safety Executive (HSE) has said that research shows that most hospitals could comply with the MEL by tightening up operational guidelines and procedures, and then ensuring that they are followed. Others will need to introduce sealed automated washer/disinfectors (AWDs) and improved ventilation systems.

The Health and Safety Executive (HSE) suggests a four-point plan on tackling the glutaraldehyde problem:

- get rid of it if possible;
- if not possible – improve standards of control and train those using it;
- improve air monitoring to check exposure levels;
- introduce health surveillance.

### Prevent Exposure

Employers must be careful not to compromise infection control, wherever possible exposure must be prevented by either replacing glutaraldehyde with another substance, by autoclaving (using steam at

high pressure), or by using single-use accessories.

Although autoclaving is usually not possible for most flexible endoscopes, it can often be used on other medical equipment. Any substance that is proposed as an alternative, must be fully COSHH assessed. Some of the possible alternative substances include the following below.

Succine dialdehyde and formaldehyde pose similar problems to glutaraldehyde. Formaldehyde has a MEL, and both may irritate the eyes and nose, and cause respiratory distress and dermatitis. Ethylene oxide is irritating to the skin, eyes, and respiratory system. It has a MEL and may cause cancer or inheritable genetic damage.

Ethanol (ethyl alcohol) has an OES and is a skin irritant. Chlorine dioxide has an OES, is very toxic by inhalation, and irritating to the skin and respiratory system. Hydrogen peroxide has an OES, is mildly toxic by inhalation, and is a corrosive irritant to the eyes, skin, and mucous membranes. Peracetic acid is irritant to the eyes, skin, and mucous membranes.

### Controlling Exposure

Where there is no suitable alternative, glutaraldehyde must only be used once sufficient precautions and control measures have been put in place. Wherever possible, it must be used only in sealed AWDs which lower the potential of splashing the skin and breathing in the fumes. The HSE has stated that it now doubts whether adequate control of glutaraldehyde can take place unless it is used, only in AWDs.

Glutaraldehyde must not be used as a general wipe-down disinfectant. It should not be used in open baths, and must be kept in sealed containers. Local exhaust ventilation must be used where it cannot be used in a fully enclosed environment.

However, it must be ensured that the exhaust does not release the fumes near other people, for example, by being sited



near an opening window.

Suitable personal protective equipment (elbow length nitrile gloves – latex gloves do not provide adequate protection, impermeable plastic aprons, and visors or goggles) and suitable respiratory protective equipment must be available not as a substitute for proper control measures, but for when it is handled or a spillage is cleared up.

When clearing up a spillage local or general exhaust ventilation is unlikely to provide adequate protection. COSHH assessments must cover the measures needed to deal with spillages, because high exposures have occurred where correct procedures for such an incident were either not followed or not in place.

### Monitoring

Where the COSHH assessment shows that it is necessary, air monitoring must be carried out in areas where glutaraldehyde is used, to check that the control measures are working. The frequency of sampling will depend on all the factors considered by the assessment.

It may need to be done on a monthly or quarterly basis. At a minimum, where a COSHH assessment reveals that it is necessary, monitoring must be carried out at least yearly. The frequency may need to be changed if there is evidence of health problems or indications that the exhaust ventilation may not be performing adequately.

A suitable measurement technique is high performance liquid chromatography, which requires laboratory analysis. There is a range of hand-held instrumental methods available, but the HSE says that these are not yet sufficiently reliable. Occupational Health Departments should seek advice from a consultant occupational hygienist on how to conduct monitoring.

### Information, Instruction, and Training

Staff using glutaraldehyde must be given

adequate information, instruction, and training to ensure that they know how to use it safely. This should include:

- the risks from exposure;
- the results of air sampling;
- safe work methods and the use of control methods, which should also be available in written form and distributed to all staff involved;
- the purpose of extraction ventilation;
- the use of protective clothing and equipment;
- the action to take in event of a spillage;
- arrangements for health checks and surveillance;
- recognising symptoms of irritation and sensitisation;
- what action to take if they think they are affected by glutaraldehyde.

### Health Surveillance

Staff who may be exposed to glutaraldehyde should receive regular health surveillance. A system for reporting symptoms should be in place, as should a system for the employer to directly enquire about and seek evidence of the development of symptoms.

Employers are required to keep a health record for each employee under health surveillance for at least 40 years from the date of the last entry.

If a member is suffering from irritation or symptoms of sensitisation not necessarily whilst at work, but which might be a result of exposure to glutaraldehyde, they must see a doctor immediately and say that they work with a respiratory and skin sensitiser.

Further exposure must be avoided. They should also go to the occupational health department as help with the early symptoms may prevent the more serious effects from occurring.



## ACTION BY HSE INSPECTORS

According to a HSE circular to its inspectors, during health and safety inspections or other appropriate visits, HSE inspectors can be expected to make enquiries as to what action is being taken:

- to substitute for glutaraldehyde without compromising infection control;
- where substitution is not reasonably practicable, to ensure exposures are below the MEL as far as is reasonably practicable;
- to carry out health surveillance.

Branches should contact their local HSE office (telephone numbers in the local directory) if their employer is not taking this approach.

## AN EXPOSURE CASE

In April 2000, UNISON member Fostina Brobbey, a theatre nurse for 25 years, was awarded £157,000 against North Manchester NHS Trust. Fostina originally worked for Ancoats Hospital, moving to North Manchester General Hospital in 1994.

At work, Fostina was regularly exposed to excessive levels of Cidex, a disinfectant which contains glutaraldehyde. She consequently developed occupational asthma in 1995, and was forced to retire due to ill health in September 1996. This represents one of the largest awards ever for asthma.

The damages included compensation for pain and suffering, past and future loss of earnings, loss of pension, and loss of congenial employment.

Speaking after the court's decision, Fostina said: "Nursing is the only job I've ever done and I really loved it. If I could go back to the job tomorrow I would, but I couldn't keep working because of the asthma.

"It has been a real strain going through the court case and the stress has made my

symptoms worse. I still wake up coughing at night, unable to breathe."

So the NHS has lost another highly experienced and committed nurse because of her employer's failure to ensure that she was not exposed. Fostina has lost the career she loved.

## WHAT CAN THE BRANCH DO?

Ensure that wherever possible, substances with a MEL are not used but instead replaced with alternative procedure or substance.

If glutaraldehyde is used, ensure that COSHH assessments have been carried out and have genuinely considered alternatives, the assessments are reviewed if necessary, and ensure that any action identified as necessary in the assessments has been taken.

If necessary, contact the local HSE office and request an inspection.

Members must be encouraged to see their safety rep immediately if they have been asked to work with glutaraldehyde and:

- the containers are unlabelled or do not refer to the health risks;
- has not been told about the COSHH assessment or air sampling results;
- has not been told whether they need health checks;
- has had no appropriate information, instruction, or training;
- there is no ventilation or it is badly maintained;
- the protective clothing is damaged or worn out

Ensure that any member suffering any symptom of irritation or sensitisation visits a doctor for further investigation, avoids further exposure, and notifies their occupational health department.

