

SAFETY ACTION NOTICE

By arrangement with NSS Health Facilities Scotland



SAN(SC)06/27
22 JUN 2006
Facilities
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ALCOHOL-BASED HANDRUBS: RISK OF FIRE

SUMMARY

In order to control the risk of fire while maximising the considerable benefits of using alcohol-based handrubs, co-ordinated risk assessments should be carried out for the placing, use, storage and disposal of handrub containers / dispensers.

BACKGROUND

1. In order to reduce the instance of Healthcare Associated Infection (HAI), the Scottish Executive Health Department (in February 2005) launched a policy of placing alcohol-based handrub (gel) dispensers "near every bed in acute, obstetric and geriatric units" throughout NHSScotland⁽¹⁾. Used in conjunction with conventional soap and water, this is intended to significantly improve the hand hygiene of staff dealing with patients and thereby decrease avoidable illness and deaths due to infection. Visitors are also encouraged to use alcohol handrubs before entering clinical areas.
2. National contracts are being set up for NHSScotland for alcohol handrub containers and dispenser cartridges from 50 to 1000 ml. The smaller containers are carried generally for personal use by staff and the larger sizes used in wall or bed mounted dispensers in ward areas and clinical units.
3. As alcohol-based handrubs are flammable, there is the risk of flash burns and fire / explosion. The control of this risk will require a co-ordinated approach by fire officers, fire safety advisors, risk managers, health & safety and infection control professionals and will involve the risk assessment of points of use and storage as well as general COSHH⁽²⁾ requirements.
4. Many alcohol-based handrubs are classified as Flammable in their Material Safety Data Sheets as their flash points are 21°C or higher. Liquids with a flash point below 21°C are classified as Highly Flammable and some manufacturers classify their handrub as such. Alcohol-based handrub gives off a flammable vapour which is heavier than air and which will burn with a colourless flame.

<i>Suggested Distribution</i>	Accident & Emergency	Accommodation Officers	All patient care areas
Ambulance Services	Capital Planning & Design	Care for the Elderly	Care Home Services
Community Care	Dental	District Nursing	Domestic Services
Estates/Facilities	Fire Safety Advisor	General Medical Practitioners	Health & Safety
Health Visitors	Hospices	Infection Control Staff	Intensive Therapy Units
Maternity	Nominated Officer Fire	Nursing	Occupational Therapy
Operating Departments	Pharmacy	Portering Services	Practice Nurses
Psychiatry	Risk Management	Safety Representatives	Stores
Supplies/Procurement	Wards	Retail outlets on hospital premises selling alcohol handrub, e.g. WRVS	



SCOTTISH HEALTHCARE SUPPLIES

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Point of use issues:

5. There are anecdotal reports of flash burns occurring on the hands of clinical staff immediately after using an alcohol handrub and concerns have been raised about the use of excessive amounts with the potential for ignition by smokers' materials, static electricity sparks or when using electrical switches, particularly when switching off equipment (e.g. lights). The risks would further increase if ignition was to occur near a patient on oxygen therapy, or while handling oxygen equipment.
6. There have been accounts of spillages from personal dispensers onto clothing with associated risk of fire as well as the effects of breathing concentrated fumes. Personal dispensers could be a problem if not closed and locked properly after use. In community / primary care settings, spillages may also occur in vehicles and bags.
7. Since there are skin care issues associated with the frequent use of alcohol handrubs, moisturisers may be incorporated in the handrub or used separately (hand cream). If the moisturiser is oil-based, or contains oily substances, there is a risk of explosion when changing medical gas cylinders and regulators with contaminated hands. Advice was provided in Safety Action Notice SAN(SC)00/17⁽³⁾ issued on 1 May 2000, and further advice may be issued shortly.
8. The risk of ingestion of alcohol-based handrub was the subject of SAN(SC)05/34 issued on 7 July 2005⁽⁴⁾.

Storage issues:

9. In order to avoid running out of handrub, ward areas and clinical units may hold reserve stock locally. Local and central (bulk) storage must comply with the fire regulations regarding the type of cabinet and store respectively^(5,6).
10. Fighting a large (i.e. bulk storage) alcohol fire using water or aqueous (water) film-forming foam (AFFF) extinguishers may be ineffective and may spread the fire over a larger area rather than put it out.

Disposal issues:

11. Used containers and dispensers will contain gel residues and flammable vapours. Rinsing out used containers with copious amounts of cold water will reduce the risk of fire and the containers may then be recycled or disposed of in general waste.

Note:

12. The benefits of using alcohol-based handrubs are considerable. However, the risks mentioned in this notice must be managed / controlled.



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ACTION

13. This notice should be brought to the attention of all appropriate managers, staff and users. It is recommended that risk managers, fire officers, fire safety advisors, health and safety managers and infection control teams should work together in the implementation of this notice and take a co-ordinated approach to the following action points.
14. Risk assessments should be carried out on the use of alcohol handrubs (gels), the location of dispensers, the storage of stock and the disposal of used containers / dispensers and expired stock, giving consideration to the risks of fire as well as COSHH requirements.

Point of use issues:

15. Handrub dispensers should not be placed above or close to potential sources of ignition, such as light switches and electrical outlets, or next to oxygen or other medical gas outlets, due to the increased risk of vapours igniting (see Background paragraphs 4 & 5).
16. Handrub dispensers should not be sited in any corridor that forms part of a means of escape (i.e. outside the ward). Fire Safety Advisors may need to be consulted. If dispensers are placed in a circulation area within a ward (e.g. outside bedded areas) it is recommended that they are at least 1.2 metres apart, the circulation area is at least 2 metres wide and the maximum container size is 1 litre. This advice is based on a Fire Modelling Analysis Report prepared for the American Society for Healthcare Engineering (ASHE) in the US in 2003.
17. Consideration should be given to the risks associated with spillage onto floor coverings, including the risk of pedestrian slips⁽⁷⁾. The siting of handrub dispensers above carpets is not recommended due to the risk of damage and lifting / warping of carpets.
18. Staff should be advised to let their hands dry and the vapours disperse after using alcohol handrub and before the following actions:
 - a) Using an electrical switch or item of electrical equipment, including an electrically powered medical device;
 - b) Using oxygen or a medical device involving oxygen;
 - c) Handling a patient or bedding if the patient is receiving oxygen;
 - d) Smoking or being near a naked flame (e.g. match / lighter).
19. Significant spillages should be dealt with immediately by removing all sources of ignition, ventilating the area and diluting with water (to at least ten times the volume). The fluid should then be absorbed by an inert material such as dry sand (not a combustible material such as sawdust) which should then be disposed of in a chemical waste container.



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20. Care should be taken when carrying personal containers / dispensers to avoid spillage onto clothing, bedding or curtains and in pockets, bags or vehicles. Containers / dispensers should be stored in a cool place and care should be taken regarding the securing of tops / lids. Should spillage occur, vapours should be dispersed by ventilating the room (or vehicle) and the contaminated item should be put in a plastic bag until it can be washed and/or dried safely. This may be of particular concern in community / primary care settings.

21. Clear instructions for use should be displayed at handrub dispenser points intended for use by visitors to clinical areas. These should include warnings not to use excessive amounts and not to smoke immediately after use.

Storage issues:

22. All alcohol-based handrubs give off flammable vapours when used on the hands regardless of whether they are classified as Flammable (flashpoint at 21°C or above) or Highly Flammable (flashpoint below 21°C). Purchasing decisions should be based on the overall effectiveness of the available products and not based on flashpoints alone. However, if the products have very different flashpoints, choosing one with a higher flashpoint will result in a lower risk of fire.

23. The quantity of handrub kept in a ward or department should be as small as is reasonably practicable for day-to-day purposes⁽⁸⁾. A fire-resisting (e.g. metal) cabinet, with means to ensure the containment of spills / leakage and segregation from other materials, is required for storage of flammable liquids in the workplace^(9,10).

24. A designated 'Highly Flammables' store will be required for situations where it is necessary to store more than 50 litres (e.g. central bulk storage).

25. Although water may be used to dilute spillages it should not be used to fight a large alcohol fire (i.e. bulk storage) as this may spread the fire over a larger area. Similarly, standard foam (AFFF) fire extinguishers should not be used as the foam may break down into water and have the same effect. Only special alcohol-resistant aqueous film-forming foam (AR-AFFF) fire extinguishers should be used on large alcohol fires. Appropriate procedures should be in place to be followed in the event of an alcohol handrub fire.

26. For smaller fires, carbon dioxide (CO₂) fire extinguishers may be effective and water or standard foam (AFFF) fire extinguishers may be used with caution. Dry powder fire extinguishers may also be used but may not be ideal for an acute hospital environment due to the amount of dust residue after discharge. The use of fire blankets should also be considered where appropriate.

27. Containers and dispenser cartridges containing handrub should be stored in a cool place away from sources of ignition. This applies also to used containers which have not been rinsed with water.



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Disposal issues:

28. The contents of dispenser cartridges and containers should be used as far as possible before the container is discarded. Preferably, and where practicable, containers should be rinsed out with copious amounts of cold tap water and then recycled or disposed of in general waste. Used containers which have not been rinsed out should not be stockpiled and nor should many containers be rinsed at the same time, in order to avoid the build up of vapours or pollution of water systems.
29. Should a non-empty container (i.e. one which has not been used as far as possible) require to be disposed of, it should be treated as Special (Hazardous) Waste subject to pre-notified uplift and collection rounds to appropriately licensed Special Waste disposal facilities, in line with Special Waste Regulations⁽¹¹⁾. Surplus alcohol handrub should not be flushed to drain and the container should be capped securely to prevent the escape of contents and/or vapour.

REFERENCES

- (1) Chief Nursing Officer letter CNO(2005)01, *Alcohol-based handrubs and infection control*, Scottish Executive Health Department, 9 February 2005
- (2) The Control of Substances Hazardous to Health Regulations 2002 (COSHH)
- (3) Safety Action Notice SAN(SC)00/17, *Medical gas cylinders: risk of fire*, 1 May 2000, Scottish Healthcare Supplies.
- (4) Safety Action Notice SAN(SC)05/34, *Alcohol-based handrubs: risk of ingestion*, 7 July 2005, Scottish Healthcare Supplies.
- (5) Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR), SI 2776
- (6) Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972, SI 1972/917
- (7) Safety Action Notice SAN(SC)05/08, *Flooring Materials: Risk Of Pedestrian 'Slip And Trip' Accidents*, Scottish Healthcare Supplies, 14 February 2005
- (8) Firecode (Scottish Health Technical Memorandum) SHTM 83 *Fire safety in healthcare premises - General fire precautions*; Property and Environment Forum Executive, revised December 1999
 - Section 3 *Fire prevention* in particular paragraphs 3.21 and 3.22,
 - Section 8 *Use and storage of flammable substances* in particular paragraphs 8.3 to 8.7, 8.12, 8.17
- (9) HSG51, *The storage of highly flammable liquids in containers*, HSE Books 1998
ISBN 0 7176 1471 9
- (10) *Fire Safety: An Employer's guide*, Home Office/Scottish Executive/Northern Ireland DoE/Health and Safety Executive. <http://www.archive.official-documents.co.uk/document/fire/index.htm>
- (11) The Special Waste Regulations 1996, SI 1996/972 and The Special Waste Amendment (Scotland) Regulations 2004, SI 2004/112



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