NSW HEALTH

Safety Information
SI:001/07

27 June 2007

Distributed to:

- Chief Executives
- Directors of Clinical Governance
- Directors of Clinical Operations

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This Safety Information provides advice on actions that can be taken to reduce the risk of incidents involving fire and alcohol-based preparations.

Alcohol Based Hand Cleansers and Fire

Incidents involving fire and alcohol-based hand cleansers reported overseas have been attributed to not allowing the product to evaporate after application. The risk of ignition is extremely low compared with the risk to patient safety of healthcare workers with contaminated hands.

Educating staff on how to use alcohol-based hand cleansers – particularly on allowing the product to dry – is an important factor in reducing the risk of fire.

Alcohol-based hand cleansers are widely used in healthcare facilities for rapid hand hygiene. When used appropriately these products are very effective at reducing the number of viable micro-organisms on the hands. Alcohol solutions containing 60-95% alcohol are most effective in the clinical setting for reducing microbial activity. Such products have been shown to increase compliance with hand hygiene and reduce skin irritation and dryness.

Tens of seconds of hand rubbing are required for vapours to dissipate. Static electricity sparks may ignite residual vapours from alcohol-based hand cleansers, and the resultant flames may last for several tens of seconds. Flames will be more intense in oxygen-enriched environments.

Depending on the type and concentration of alcohol, the flashpoint of alcohol-based hand cleansers ranges from 21-24°C. These products should be stored away from high temperatures and flames.

Steps to minimise risk

- Alcohol-based hand cleansers should remain widely available in easy-to-access locations, such as near patient beds and nursing stations.
- Healthcare workers should be educated in the appropriate use of alcohol-based hand cleansers including storage, flash point, risk in oxygen-enriched environments, and the requirement to dry hands before proceeding with the next task.
- Storage of alcohol-based hand cleansers should be consistent with GL2006_010 Hazardous Substances and Dangerous Goods in NSW Health – Guidelines for Safe Use.

Further Reading

Clinical Excellence Commission, Clean Hands Saves Lives Campaign

ERCI. Fire Risk from Alcohol-Based Hand Sanitizers Worsens in Oxygen-Enriched Environments, Health Devices Alerts, November 3 2006; Vol 30, No 44.

MMWR. Guideline for Hand Hygiene in Health-Care Settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee, October 25 2002; Vol 51, No RR-16.

Recommended actions by Area Health Services

1. Forward information to appropriate area for action.
2. Ensure a system is in place to document actions taken.

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Alcohol Based Skin Preparations and Fire in the Operating Theatre

In December 2006 and January 2007, respectively, Queensland Health and the Centers for Medicare and Medicaid Services of the USA, Department of Health and Human Services recommended the adoption of fire risk reduction strategies when using alcohol-based skin preparations in the operating theatre.

Alcohol-based preparations are considered to be one of the most effective and rapid acting skin preparations but they are also flammable and can contribute to the risk of fire in the operating theatre, if used inappropriately.

Fires can occur when fuel, an oxidizer and an ignition source come together. All three elements are present in the operating theatre, for example, alcohol-based skin preparations, combined with the oxygen rich environment in the operating theatre, could ignite when exposed to a heat producing source such as a diathermy. While the operating theatre provides an environment conducive to the risk of fire, **such events are rare.**

On the other hand, **surgical site infections** pose a significant risk to patients. Hence, when considering the use of alcohol-based skin preparations in the operating theatre, there is a need to balance the risk of fire with the risk of surgical site infections.

If alcohol-based skin preparations are inappropriately applied, the solution may wick into the patient's hair and linen or pool on the patient's skin, resulting in a prolonged drying time. If the patient is then draped before the solution is completely dry the alcohol vapours can become trapped under the surgical drapes and be channelled to the surgical site.

Steps to minimise risk

The use of alcohol-based skin preparations in the operating theatre should be accompanied by appropriate fire risk reduction measures. These measures include:

- Use alcohol-based skin preparations with caution in the operating theatre.
- Do not use alcohol-based skin preparation prior to procedures involving or likely to involve electric cautery, laser or use of diathermy.
- Avoid run-off and pooling of alcohol-based skin preparations by using only the minimum amount of alcohol-based skin preparation necessary and allow the solution to completely dry prior to draping.
- Do not allow alcohol-based skin preparations to soak into the patient's hair or linen.

Further Reading

Maiwald M, Farmer CJM, Lance DG et al, Surgical antisepsis and the risk of operating theatre fires (Comment. Letter), 2006;76(7):651.

Queensland Health, Recommendations for Surgical Skin Antisepsis in Operating Theatres, December 2006

RACS, Infection Control in Surgery, 1998 revised 2001

Spigelman AD, Swan JR, Skin Antiseptics and the Risk of Operating Theatre Fires, ANZ J Surg 2005;75:556-558.

Tooher R, Maddern GJ, Simpson J, Surgical Fires and Alcohol-Based Skin Preparations, ANZJ Surg 2004;74:382-385.

USA Department of Health and Human Services, Use of Alcohol-based Skin Preparations in Anaesthetizing Locations (Memorandum), 12 January 2007.