

## Disinfectant cleaning wipes can burn! The hazards of cleaning without adequate skin protection

Kate <u>Dear</u>,<sup>1</sup> Jennifer <u>Nguyen</u>,<sup>1</sup> Rosemary <u>Nixon</u><sup>1</sup> <sup>1</sup> Occupational Dermatology Research and Education Centre, Skin Health Institute, Level 1/80 Drummond Street, Carlton, VIC 3053

Corresponding author: Kate Dear, Occupational Dermatology Research and Education Centre, Skin Health Institute, Level 1/80 Drummond Street, Carlton, VIC 3053

Conflicts of interests: None

Keywords: Irritant contact dermatitis, sporicidal, wipes, chemical burn, post-traumatic eczema

The COVID-19 pandemic has led to increased hygiene and disinfectant practices throughout industries, home environments, and healthcare settings. Hazardous exposure to disinfectants and cleaning agents seen by U.S poison centres has increased by almost 25% since the pandemic began.<sup>1</sup>

## CASE REPORT

A 67-year-old nurse presented to our tertiary referral occupational dermatology clinic seven weeks following the onset of a painful, pruritic, vesicular eruption with marked oedema of her hands and forearms (See Figure 1). The eruption began within 2 hours of direct dermal exposure to Clinell Sporicidal Wipes<sup>®</sup> (GAMA Healthcare Ltd, London, UK), which she used to clean a metal pole without the use of personal protective equipment, namely gloves. The eruption worsened in severity over 24 hours. There was no atopy or previous skin disease. She was initially commenced on oral prednisolone 25mg once daily for two weeks alongside topical methylprednisolone aceponate 0.1%, with improvement.

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/cod.13800

This article is protected by copyright. All rights reserved.

However, symptoms relapsed on weaning prednisolone. When examined, she had a vesicular eruption of her palms with more marked fissuring on the left side.

She was extensively patch tested to the Australian Baseline Series, rubber chemicals, cosmetics and antiseptics and to her own samples. Positive reactions to paraphenylenediamine (PPD), cobalt, limonene, linalool, textile mix and benzoic acid were seen, however none were thought relevant to her condition. No other causative exposures or triggers could be elicited. Microbiological swab showed normal skin flora. Histology showed moderate spongiosis with vesiculation, compatible with irritant contact dermatitis (ICD).

She was commenced on mycophenolate 500mg mane, 1000mg nocte with weaning dosage of prednisolone. She underwent narrowband ultraviolet light therapy for 2 months but this aggravated and was ceased. After 4 months of treatment, the eruption had resolved and there was just residual erythema. A diagnosis of severe ICD with post-traumatic eczema was made, secondary to direct skin contact with Clinell Sporicidal Wipes<sup>®</sup>.

## DISCUSSION

Clinell Sporicidal Wipes<sup>\*</sup> are dry, single surface disinfectant wipes which generate peracetic acid (C<sub>2</sub>H<sub>4</sub>O<sub>3</sub>) and hydrogen peroxide from sodium percarbonate and tetraacetylethylenediamine once wet.<sup>2</sup> Designed for disinfecting surfaces of non-invasive medical devices, they have powerful sporicidal activity against a range of fungal, bacterial and viral pathogens including *C.difficile* spores and coronaviruses.<sup>3,4</sup> Peracetic acid can be corrosive and is already well known to be a strong skin, eye and mucous membrane irritant in humans, but not a sensitizer.<sup>5</sup> It is also toxic when ingested or inhaled.<sup>6</sup> When peracetic acid comes into contact with the skin, it can cause erythema, pain, blisters and burns.<sup>6</sup>

Disinfectant wipes have an important role in healthcare settings, and their use should not be restricted. However, this case report highlights the importance of following the manufacturer's guidance and using appropriate personal protective equipment when handling these potentially harmful disinfectant wipes. In our patient's case, her severe ICD evolved into post-traumatic eczema, likely a result of significant cutaneous trauma caused by the corrosive and irritating nature of peracetic acid.<sup>7</sup> Systemic immunosuppression in addition to topical corticosteroid was required to adequately manage our patient's condition. The long, protracted healing course was significant both financially and to the patient's quality of life.

As hygiene practices evolve during the COVID-19 pandemic, dermatologists are likely to see a rise in ICD as well as other skin conditions. Healthcare workers must remain mindful to the implications of handling corrosive and irritating substances without the use of appropriate skin protection.

## References:

- Chang A, Schnall A, Law R. Cleaning and Disinfectant Chemical Exposures and Temporal Associations with COVID-19 - National Poison Data System, United States, January 1, 2020-March 31, 2020. MMWR Morb Mortal Wkly Rep. 2020;69:496-498.
- Gama Healthcare. Safety Data Sheet Clinell Sporicidal Wipes 2019. https://gama.getbynder.com/m/16be8532bf8221b8/original/Sporicidal-Wipes-SDS-Australia.pdf. Accessed 24 December 2020
- Lukula S. Virucidal Quantitative Suspension Test for Chemical Disinfectants and Antiseptics Used in the Medical Area: MERS-Coronavirus (MERS-CoV) 2020. https://gama.getbynder.com/m/626f1fe9d80dc1f8/original/Coronavirus-efficacyreport-Clinell-Universal-and-Clinell-Sporicidal.pdf Accessed 24 December 2020
- Rutala W, Weber D. Guideline for Disinfection and Sterilization in Healthcare Facilities 2019. https://www.cdc.gov/infectioncontrol/guidelines/disinfection/. Accessed 24 December 2020
- 5. You Y, Bai Z, Yan L. Peracetic Acid Exposure Assessment During Outbreak of SARS in Tianjin, China. *Epidemiology*. 2006;17(6):S217-S218.
- Lewis RJ. Peracetic Acid. In: *Hawley's Condensed Chemical Dictionary*. 15th ed. John Wiley & Sons; 2007.

Author Manuscript



Figure 1: Bilateral erythema with vesicles papules and oedema following direct dermal exposure to peracetic acid in Clinell Sporicidal Wipes<sup>®</sup>