

SAFE USE OF 10% POTASSIUM HYDROXIDE (KOH) IN SCREENING FOR SEXUALLY TRANSMITTED INFECTIONS

Background

The potassium hydroxide (KOH) “whiff” test is used in the clinical diagnosis of Bacterial Vaginosis (BV). Performing the “whiff” test involves placing 0.25 to 0.5 mL of 10% potassium hydroxide onto a slide. Vaginal secretions are collected onto a swab which is then dipped into the solution on the slide and the mixture is tested for amine odour.

Concern has been raised because WHMIS classifies solid potassium hydroxide as “very toxic”.

Information About Potassium Hydroxide (KOH)

The health hazards of KOH whether in solution or as a solid relate to its corrosive effects.

KOH is a strong alkali. The pH of a 0.1M solution (0.5%) is 13.5. Aqueous solutions of KOH are colourless and odourless. Literature suggests that KOH has a negligible vapour pressure and is rapidly neutralized in air by carbon dioxide therefore inhalation of KOH vapour is unlikely. However, airborne KOH aerosols may be inhaled if present. The occupational exposure limit for KOH is 2 mg/m³ (this is a ceiling limit – not to be exceeded at any time).(Merck index, 2006)

Dermal exposure to aqueous KOH would be expected to cause a burn to the skin, the severity of which would depend on the concentration of the solution and the length of time the skin was exposed. The same could be said for ocular exposure. Similarly, ingestion of aqueous KOH would be expected to cause burns to the oropharynx and tissues of the upper gastrointestinal tract, the severity of which would depend on the concentration of the solution and amount ingested. Inhalation aerosols would be expected to cause irritation to the upper respiratory tract, characterized by nasal discharge, coughing and wheezing. Systemic toxicity is not expected.(Index, 2004; Poison management manual: Alkali, 2015)

Using 10% Potassium Hydroxide (KOH) in Clinical Settings

For the KOH “whiff” test, staff are expected to briefly (1-2 seconds) sniff for odours over 0.25 to 0.5 mL of a 10% KOH solution at room temperature. Given a negligible vapour pressure for aqueous KOH, it is unlikely that adverse effects would occur or that exposure limits would be exceeded. The test has been used for years in many jurisdictions and there is no evidence of harm. More of a concern may come from inadvertent exposure

to the skin or eyes either by touching the solution or spilling it. Exposure may be minimized by wearing gloves and taking care to avoid contact with facial skin, eyes, or nasal passages. (OECD), 2002)

One resource suggests cautions to minimize possible adverse local effects to skin or nasal passages: (MDHHS, 2006):

Holding the slide or swab, gently fan the vapour layer (whiff) above the surface of the slide or swab to assess for the presence of volatile amines which have a fishy odour. NOTE: to prevent possible injury, caution should be taken not to place the slide or swab close to the face directly under the nose.

Summary

The KOH “whiff” test is used to screen for bacterial vaginosis. This involves briefly sniffing room temperature vapours from a small volume of a 10% aqueous potassium hydroxide solution. While there are no formal studies in this setting, brief exposures of this nature are not expected to cause adverse effects or exceed occupational exposure limits. Systemic toxicity is not expected. Appropriate precautions and safe work procedures should be exercised to minimize local effects to skin, eyes, or nasal passages.

Please note that BC Centre for Disease Control does not endorse the use of 10% KOH in clinical settings without an independent quality control measure in place. BCCDC does not assume any liability associated with use of 10% KOH. This statement is intended as a guideline and the use of 10% KOH in clinical settings must be under the direction of a licensed health care professional and with appropriate quality and safety measures in place. For additional support with safe handling, storage and disposal of KOH, please contact your site’s Workplace Safety Department.

References

(MDHHS), M.D.o.H.H.S. (2006). Wet mount analysis - pH and amine ("whiff") analysis Regional laboratory manual: Laboratory procedure manual. Lansing, Michigan: Michigan Department of Community Health. Retrieved from https://www.michigan.gov/mdhhs/0,5885,7-339-71551_2945_5103_7168-15018--,00.html

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Index, T.S. (2004). Workplace hazardous materials information system (WHMIS).

Merck index. (2006). (M. O'Neil Ed. 14th ed.). Whitehouse Station, New Jersey: Merck & Co. Poison management manual: Alkali. (2015). (D. Kent Ed. 5th ed.). Vancouver, BC: BC Drug & Poison Information Centre (DPIC).