

TECHNICAL BULLETIN – THE IMPACT OF pH ON SAFETY EQUIPMENT REQUIREMENTS

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Purpose: To clarify the Occupational Health and Safety Administration (OSHA) requirements for safety equipment when using products with extremely high or low pH.

OSHA Regulations: In the United States, OSHA provides regulatory oversight to protect workers from harmful exposure to chemicals and other substances in the workplace. The regulations outline how to classify the hazards of substances and define safety measures that should be incorporated when hazardous substances are being used.

An employer must provide personal protective equipment (PPE) at no charge to an employee if they are working with a hazardous chemical. This can include such things as barriers to protect eyes and skin, and may include access to eyewash stations and safety showers for protection of the employee in the event exposure occurs while using a hazardous substance.

Classifying Hazardous Chemicals: The pH of a liquid is often used as a proxy for assessing the safety risk to workers for direct eye and/or skin contact. Neutral on the pH scale is 7. As the pH increases (greater than 7) the solution becomes increasingly alkaline. As the pH decreases (less than 7), the solution becomes increasingly acidic.

There is a general correlation between distance from neutral (pH of 7), and danger associated with direct skin/eye contact. Materials with high acidity (low pH), such as sulfuric or hydrochloric acid, and materials with high alkalinity (high pH), such as sodium hydroxide or potassium hydroxide, can represent a human safety risk for skin or eye contact.

Absent test data from the manufacturer, OSHA provides guidance to facilities to aid in performing their own hazard assessment of the risks. One of the criteria is that products with extreme pH (<2 or >11.5) should be considered as corrosive to eyes and skin unless there is information indicating otherwise. This is not the only consideration, but it is frequently cited to support the classification of a material as corrosive, absent other toxicology data.

Chemicals and Personal Safety Risk: The associated pH of a chemical does not provide a direct correlation with personal safety risk. OSHA regulations clearly place responsibility for classifying the hazard risks of products on the manufacturer.

In many cases, manufacturers conduct additional assessments on chemicals to identify potential hazards. As part of the EPA registration process for a disinfectant in the U.S., manufacturers are required to run a series of toxicology studies to determine the degree of risk from direct exposure to the disinfectant. For dilutable disinfectants, a separate assessment is performed on

the concentrate and use solution.

Diversey disinfectants, including its AHP® line of disinfectants, have also been tested by third parties to determine the potential hazards. This data was submitted and reviewed by the U.S. EPA as part of the disinfectant registration process. These studies, combined with EPA's review of the data, ultimately determine the appropriate hazard ratings for the disinfectant.

In all cases, the findings of manufacturer and third party assessments will be found on labels and Safety Data Sheets (SDS), and override any general criteria, such as the extreme pH guidance.

It is the facility management's responsibility to determine the potential for exposure to hazardous materials in their workplace based on the data available to them. Using the data that Diversey Care (or another supplier) provides on the product label and SDS, along with a risk assessment of the potential for exposure to corrosive substances, will help determine whether PPE, eyewash and safety showers are required.

Conclusion: Manufacturer labels and SDS should be used for classifying hazardous chemicals and determining required PPE and other safety measures. In the absence of this information, general criteria from OSHA should be used to assist in the hazardous classification of chemicals.

If there are any questions about this assessment or any Diversey products, please contact Diversey Customer Technical Support at 1-800-558-2332, option 5.