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**Workplace Design for Natural Light Utilization**

This document details the design considerations for maximizing natural light utilization in a food manufacturing facility (NIC Code 10101) to reduce energy consumption and improve the workplace environment.

1. Scope

This document covers the design aspects related to maximizing natural daylight within the facility to minimize reliance on artificial lighting. This includes building orientation, window placement, and interior design elements.

2. Methodology

**2.1 Building Orientation: The building should be oriented to maximize solar gain during daylight hours, minimizing shading from other buildings or structures. This will vary depending on the geographical location and climate. South-facing orientations are generally favorable in the Northern Hemisphere.**

**2.2 Window Placement and Design: Strategic placement of windows is critical. Maximize window area on exterior walls facing optimal directions. Utilize high-performance glazing (low-E coatings) to reduce heat gain in summer and heat loss in winter. Consider the use of light shelves to reflect daylight deeper into the workspace.**

**2.3 Interior Design: Light-colored interior finishes (walls, ceilings) will reflect daylight more effectively. Use translucent partitions or skylights to distribute natural light to interior areas. Avoid placing large, dark furniture or equipment that could obstruct natural light.**

**2.4 Daylighting Simulation: Utilize daylight simulation software to model and optimize natural light distribution within the workspace. This allows for accurate prediction of lighting levels and identification of potential design flaws before construction.**

3. Compliance Notes

* Building Codes: Ensure compliance with all relevant building codes and regulations concerning natural light requirements, window sizes, and energy efficiency.
* Fire Safety: Windows and other daylighting elements must meet fire safety codes.
* Emergency Lighting: Ensure adequate emergency lighting is provided regardless of natural light levels.

4. Practical Guidelines

* Light Metering: Measure natural light levels at various locations throughout the facility to assess effectiveness of daylighting strategies.
* Occupant Feedback: Gather feedback from employees on the effectiveness of natural lighting.
* Adaptive Lighting Systems: Consider incorporating adaptive lighting systems that adjust artificial lighting levels based on natural light availability.

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