

$$x^2 + 3(c) + ab$$

$$f(x) [a+b] + v_i$$

$$\sqrt{ab} (c) x^2 + 3$$

$$f = -0.5 z^2 \frac{\sqrt{I}}{\sqrt{I+1}}$$

$$3 + f(x) + v_i$$

$$K = \frac{[NH_3]^2}{[N_2][H_2]^3}$$

$$\theta + [a] 7 x + 3$$

$$5x^2 + a(b) + v_i$$

$$sb + [a] + (c) x^3$$

INNOVATING TOWARD SUSTAINABILITY

ONE CUSTODIAL SHIFT AT A TIME

LYNNE OLSON, PHD

CORPORATE SCIENTIST

May 2015



Everywhere It Matters.™

Background

Location: McCarran International Airport (Las Vegas)

Operational Goals	Strategies	Pilot Test Results (extrapolated per year)
1. Improve Safety	Source daily cleaner that has no PPE requirements	Each dispensed solution carries an HMIS rating of 1,0,0 (health, flammability & physical hazards)
2. Resource Reduction	Source on-site generation system for daily cleaning chemistry	Glass cleaner: Shipping weight- 95% Plastic waste- 6,300 lb.
3. Cost Savings	Replace daily custodial chemistry with EAW system	\$10,000 - \$15,000

Solution

Description	Technology	Output
Ionized Water	Water + Electrical Charge	Water
Liquefied Ozone	Oxygen (air) + Electrical Charge + Water	Highly reactive, unstable ozone (O ₃)
Electrolyzed Water	Salt + Water + Electrical Charger	<ul style="list-style-type: none">• 1, 2 or 3 chamber cell technologies• Acid + alkaline outputs• System may have single or combined outputs

Hydris™ System



Three Products

- ✓ Disinfectant cleaner
- ✓ All purpose sanitizer / glass cleaner
- ✓ Daily floor cleaner

No PPE

Minimized chemical storage
and packaging waste

Strategy & Prioritizing

Location: McCarran International Airport (Las Vegas)
Sustainable Purchasing Strategy: Operations



Case Study Connect to SPLC Guidance

Executive Summary Cleaning and Sanitizing for Facilities Care

Understanding

Why do we care?

- **Worker Exposure to Hazardous Materials.** The process of cleaning and sanitizing a facility requires worker contact with products that may contain toxic chemicals or hazardous substances that could cause harm if used improperly.
- **Solid Waste Generation.** Cleaning and sanitizing products are stored in containers and often delivered by a device (e.g. spray bottle) that can significantly contribute to the solid waste.
- **Proper Use.** Proper training for delivery, application and disposal is critical for maximizing safety, ensuring product efficacy, and reducing waste.

Action

How can we exercise leadership?

- Purchase products with reduced exposure hazards.
- Purchase products with reduced solid waste impacts.
- User training

Results

What are the benefits?

- External*
- Improved occupant satisfaction
 - Reduced environmental impacts
 - Reduced solid waste impacts
- Internal*
- Improved user safety and satisfaction
 - Reduced waste
 - Increased efficiency

Results: McCarran Intl. Airport Pilot Test

- ▲ Worker exposure, PPE is not required
- ▲ On-site generation reduces solid waste (est. 6,000lbs annually)
- ▲ Proper use is enabled and validated

- ▲ Pilot testing proposed solution at facility to document that operational goals are met.

- ▲ Simplified inventory management
- ▲ Reduced packaging waste & freight
- ▲ Worker safety
- ▲ Effective cleaning, odor control, disinfecting and sanitizing