

Chemishield at PepsiCo Dallas, Texas



PEPSICO



Chemishield

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PEPSICO

Transforming Waste Management for PepsiCo a Global Food & Beverage Leader

Client Overview

Pepsico, Plano Texas, operates a number of laboratories focused on R&D testing.

With a commitment to sustainability, operational excellence, and regulatory compliance, the company continuously seeks innovative solutions to optimize processes, reduce environmental impact, and enhance workplace safety.



The Challenge: Digitising Waste Management

Before implementing Chemishield, the lab faced several challenges that many facilities struggle with:

Manual waste tracking — Paper logs and spreadsheets made compliance reporting a headache.

Lack of visibility — EHS personnel had no real-time insights into waste volumes and disposal schedules.

Compliance risks — Ensuring adherence to environmental regulations was time-consuming and error-prone.

Chemishield Features Benefiting PepsiCo

Chemishield's waste management software is designed to help laboratories efficiently manage chemical waste, ensuring compliance, safety, and sustainability.

1. Regulatory Compliance & Reporting

- Automatically tracks hazardous waste disposal in compliance with local, national, and international regulations (e.g., EPA, REACH).
- Generates waste manifests and audit ready reports to streamline inspections.

2. Real-Time Waste Tracking

- Provides a digital log of waste generation, storage, and disposal for full traceability.
- Monitors waste accumulation in real-time, reducing risks of overstocking or non-compliance



Chemishield Features benefiting PepsiCo (cont.)

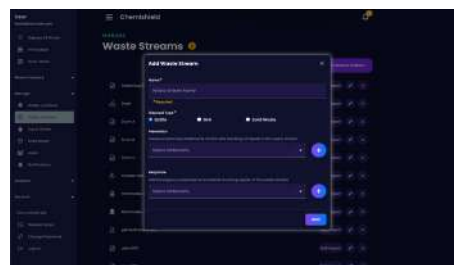
3. Automated Labeling & Documentation

- Generates GHS-compliant waste labels with required hazard information.
- Ensures accurate documentation for safe handling and disposal.



4. Waste Segregation & Reduction

- Guides lab staff on proper segregation to minimize hazardous waste generation.
- Identifies opportunities to reuse or recycle certain chemicals.



5. Cost Reduction & Sustainability

- Helps optimize waste disposal schedules, reducing unnecessary pickups and costs.
- Supports green chemistry initiatives by analyzing waste trends to reduce hazardous waste production.



6. Integration with Inventory Management

- Connects with Chemishield's chemical inventory system to track waste from the moment chemicals are purchased to their disposal.
- Prevents excess waste by flagging unused chemicals before they expire.



7. User-Friendly Interface & Mobile Accessibility

- Allows lab personnel to log waste via desktop or mobile app for convenience.
- Reduces administrative burden by automating waste tracking processes.



The Solution: A Smarter, Digital Approach

With Chemishield in place, the lab has completely transformed its waste management workflow:

Automated waste logging — No more manual tracking; every disposal is digitally recorded in seconds.

Real-time insights — Lab managers and EHS now have insight into waste levels and correct waste segregation

Seamless compliance reporting — Generating reports for regulatory audits is now a one-click process.



Hazardous waste disposal at PepsiCo Plano (01 Mar to 15 Apr)

339.5 L

Hazardous Waste
Generated

0

Segregation
Issues

49.4 L

Dietary Fibre
Waste

24 Mis Scans

Potential Accidents
Avoided

261

Number of disposals
in 6 weeks



Chemishield Cost Savings & Performance Metrics – PepsiCo Plano Facility

Reduced Time Spent on Manual Data Entry & Reporting

Before Chemishield:

Lab staff manually recorded waste data onto a form on a clipboard, with EHS transcribing that info into a spreadsheet for reporting purposes, spending approximately 5 hours per week.

After Chemishield:

Automated reporting reduces this time to about 15 minutes per week.

Estimated Savings:

- $4 + \text{hours saved per week} \times \$50/\text{hr}$
(EHS labor cost) = **\$200 per week**
- Annual Savings: $\$200 \times 52 = \mathbf{\$10,400}$



Reduction in Non-Compliance Fines & Audit Costs

Before Chemishield:

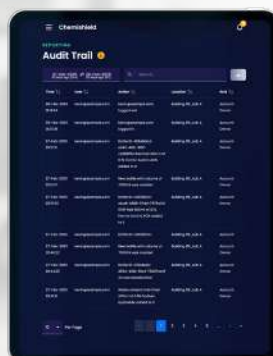
Potential RCRA fines due to incorrect waste tracking or incomplete records could reach around **\$25,000**.

After Chemishield:

Automated compliance ensures accurate reporting, reducing the risk of fines.

Estimated Savings:

- Avoiding one major fine per year saves **\$25,000**.
- Reduction in audit preparation costs
(~\$5,000 per audit)
Saves an additional **\$5,000**.
- Total Annual Savings: **\$30,000**



Chemishield's Audit Trail allows a management to view all the actions taken by users.

Reduction in Waste Disposal Costs (Bulk Waste Efficiency)



Before Chemishield:

Inconsistent bulking practices led to higher hazardous waste disposal costs (~\$20 per gallon).

After Chemishield:

Correct segregation during the bulking phase reduces unnecessary hazardous waste volume.

Estimated Savings:

- A 10% reduction in hazardous waste disposal costs can save approximately = **\$500 per month**
- Annual Savings: **\$6,000**

Increased Productivity for Lab Personnel

Before Chemishield:

Lab staff spent roughly **5 minutes per waste disposal event** manually recording data, with an estimated 50 events per week. This also included figuring out what waste goes where, and accounts for time spent identifying the correct waste drum for decanting.

This time has been averaged out as decanting happens weekly and not daily and generally can take **15+ minutes**.

After Chemishield:

Automated tracking reduces recording time to 1 minute per event.

Estimated Savings:

- 4 minutes saved per event x 50 events per week = 200 minutes saved per week.
- At a rate of \$40 per hour (Lab Technician Rate), this equals about 3.3 hours per week.
- Weekly Savings: Approximately **\$132 per week**.
- Annual Savings: **\$6,864**



Avoidance of Costly Lab Accidents

An additional benefit of Chemishield's precise waste segregation functionality is the prevention of lab accidents. Consider a hypothetical scenario where an incorrectly segregated hazardous waste container explodes, causing:

Injury Costs:

Medical treatment, rehabilitation, and compensation could exceed **\$100,000**.

Lab Downtime:

A shutdown for cleanup, safety reviews, and rescheduling testing (e.g., 3–5 days) might cost between **\$30,000–\$50,000**.

Investigation & Documentation:

Root cause analysis and documentation efforts might add **\$10,000–\$15,000**.

Cleanup & Remediation:

Remediation, decontamination, and disposal of damaged equipment could range from **\$20,000–\$30,000**.



Estimated Incident Cost:

The overall cost of such an incident could easily exceed **\$160,000–\$200,000**.

Chemishield's prevention of even one such incident annually represents a significant cost avoidance.



Chemishield's two-step verification ensures users cannot dispose of waste in the wrong container

Optimized Waste Collection Scheduling & Cost Savings

Chemishield's digital twin functionality allows EHS teams to monitor waste levels in real time, preventing overstocking and ensuring that empty drums are always available when needed. This leads to significant cost savings in multiple areas:



Reduced Overstocking & Storage Costs

Before Chemishield: Without real-time tracking, waste drums often pile up in storage areas, leading to overcrowding and potential compliance risks.

After Chemishield: With optimized scheduling, only the necessary number of waste drums are on-site, reducing storage inefficiencies.

Estimated Savings: Eliminating excess drum storage and optimizing waste removal can reduce facility storage costs by \$300 per month.

Annual Savings: \$3,600



Improved Drum Availability & Operational Efficiency

Before Chemishield: Lab staff frequently encountered full drums with no empty replacements, causing delays in waste disposal and lab processes.

After Chemishield: Automatic notifications ensure empty drums are available when needed, preventing workflow disruptions.

Estimated Savings: Avoiding productivity loss from delays (estimated at 2 hours per week per lab, with an average labor cost of \$50/hour) results in savings of \$400 per month.

Annual Savings: \$4,800



Lower Labor & Handling Costs

Before Chemishield: EHS personnel spent significant time manually checking waste levels and coordinating emergency waste collections.

After Chemishield: Real-time data optimizes waste collection schedules, reducing unnecessary labor hours.

Estimated Savings: Cutting 5 hours per month of unnecessary EHS labor (at \$60/hour) results in savings of \$300 per month.

Annual Savings: \$3,600

Total Annual Cost Savings from Optimized Waste Collection:

Reduced storage costs: **\$3,600**

Improved operational efficiency: **\$4,800**

Lower labor costs: **\$3,600**

Total Estimated Annual Savings: \$12,000



The background of the slide is a collage of four grayscale images. Top left: A worker in a white protective suit stands in a large warehouse filled with rows of stacked metal drums. Top right: Two scientists, a woman and a man, both in white lab coats, are looking at a tablet together in a laboratory setting. Bottom left: A close-up of a worker's legs and feet in white protective gear, standing near several large white drums with hazard symbols. Bottom right: A worker in a white lab coat and safety glasses is looking down at a clipboard in a laboratory, with shelves of various bottles and containers in the background.

Summary of Total Estimated Annual Savings & Cost Avoidance

Cost Savings Category	Annual Savings/Avoidance
Manual Data Entry Reduction	\$10,400
Compliance & Audit Avoidance	\$30,000
Waste Disposal Cost Reduction	\$6,000
Lab Productivity	\$6,864
Optimized collection	\$12,000
Total Efficiency gains	\$65,264
<hr/>	
Add Avoided Lab Accident Costs	\$160,000 – \$200,000+
Total Estimated Benefit	\$225,264 – \$265,264+

What's Next?

The success of Chemishield at PepsiCo Dallas lays the foundation for a broader partnership, with potential expansion to additional PepsiCo locations worldwide.



By scaling Chemishield's advanced waste management system across multiple facilities, PepsiCo can further standardize safety protocols, enhance compliance, and improve operational efficiency at a global level.

Future software improvements and enhanced automation features, will help PepsiCo optimize stock levels, reduce waste even further, and streamline their waste management processes.

With **continuous innovation and collaboration**, Chemishield will continue to evolve alongside PepsiCo's needs, ensuring long-term efficiency, sustainability, and compliance in their operations.

An example of Chemishield's innovation came from our **improvements to the decanting process**.

Challenge Identified

While the logic behind decanting was sound, the practical execution revealed several friction points:

- Users were unsure of the correct decanting steps
- Interface cues didn't clearly distinguish decanting from disposal
- Errors in user flow led to temporary mislabeling or uncertainty in bottle status

Though compliance and safety were never compromised, the UX friction risked undercutting the sustainability and operational benefits of the feature.

Rapid Response and Solution

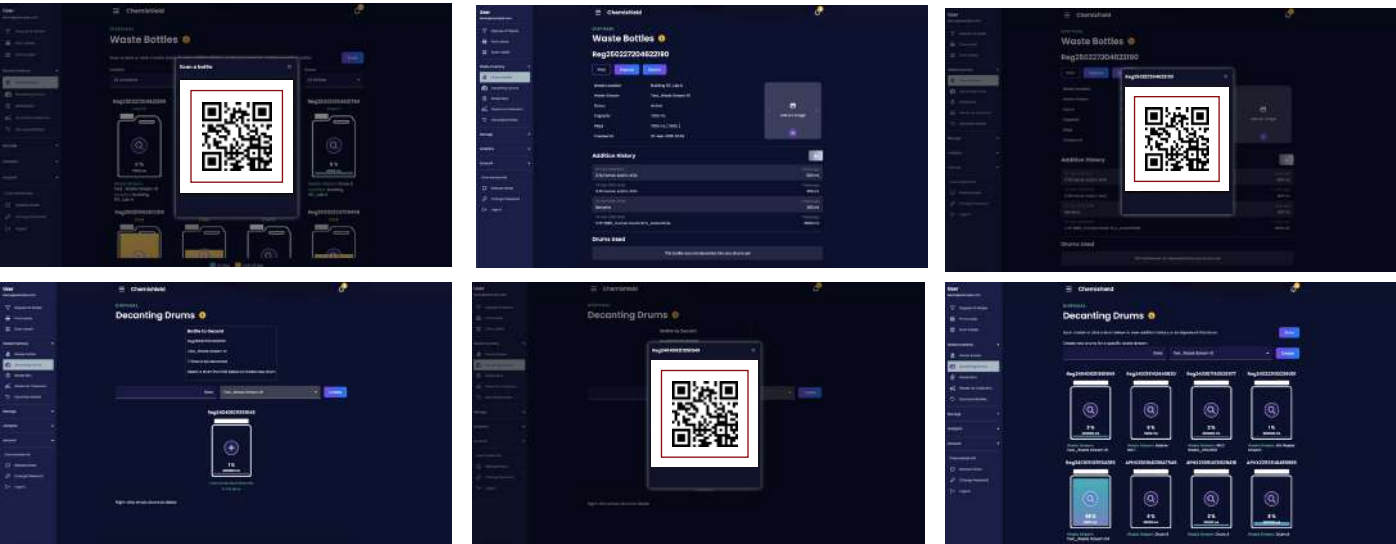
Thanks to Chemishield’s integrated tracking capabilities, the software quickly identified these “unhappy paths” in the decanting workflow. Our team immediately moved into a rapid prototyping cycle to resolve the issues. The approach included:

Mapping UX Friction Points: Observing user sessions and reviewing feedback to pinpoint where confusion arose.

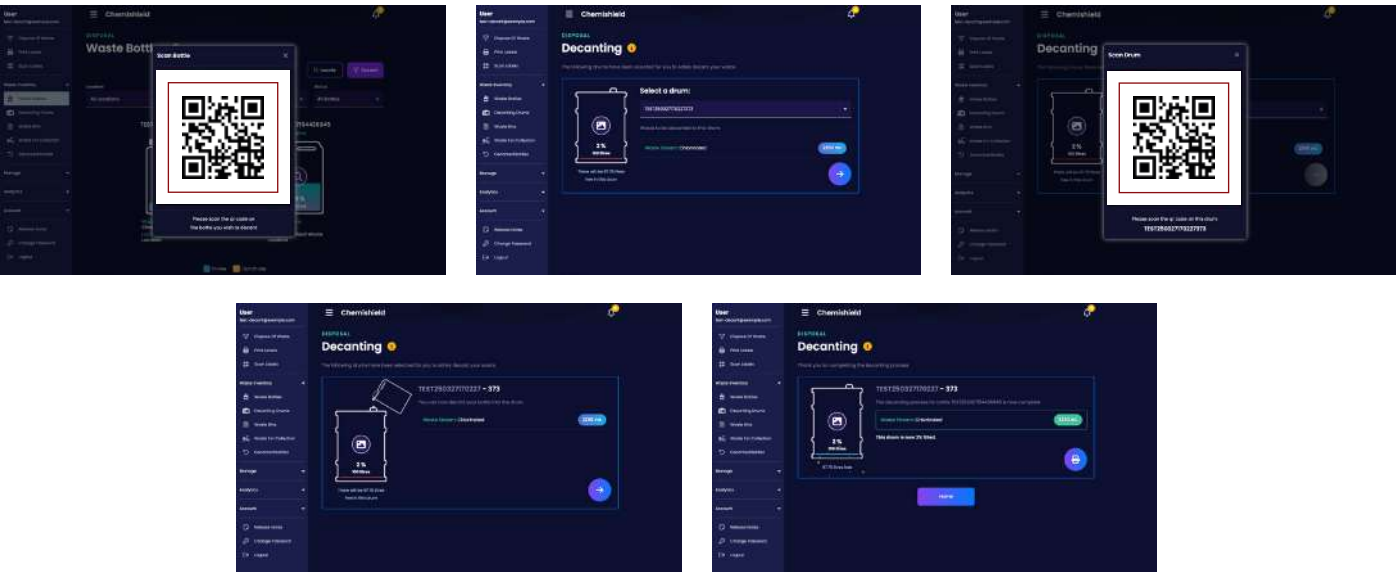
Designing a New Flow: Prototyping a simplified, intuitive decanting process with improved visual cues, clearer instructions, and progressive disclosure to guide users step-by-step.

User Testing: Conducting targeted usability testing with facility staff to validate the updated process.

Before



After



The Results

The new user flow provides clear instructions on which drum to use, when to decant, and offers a clear summary of the completed action—eliminating confusion and improving user confidence.

Other Changes

In addition to improving the decanting flow, we implemented several other UX and UI enhancements based on user feedback to further streamline interactions and reduce friction across the platform.

Reuse Bottle Function

When disposing of waste with Chemishield, the user will be encouraged to reuse a bottle that has been decanted. Users will now not have to remember to select 'Reuse' in the 'Decanted Bottles' section. Chemishield will now detect that a bottle can be reused when disposing of waste.

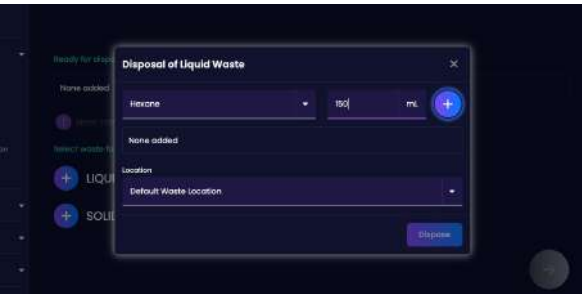


Enhanced Visual Feedback

We have added a glow effect to the “+” button when inputting the quantity of waste for a disposal. This visual cue improves visibility and ensures a more intuitive user experience.

Decanting of Empty Bottles

To maintain accuracy and safety, Chemishield now restricts users from decanting empty bottles, preventing errors in waste tracking and disposal.



User Feedback



“The new decanting process is so much clearer—I know exactly which drum to use and when.”

“Before the update, I was double-checking every step. Now the system just guides me through it. It’s faster and I feel more confident that I’m doing it right.”



“The changes have really improved our workflow. We’re using fewer bottles, keeping everything compliant, and it’s just easier for everyone to follow.”



Thank You



Visit chemishield.com to get a recorded or live demo



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