



Successful TUR Implementation Stories

TURA Virtual Conference Session C

November 5, 2020
9:00 – 10:30 am



Outstanding Bath Case Study – Methylene Chloride

- Methylene chloride is a widely used, effective solvent ingredient for paint stripping during bathtub refinishing.
- When used as a stripping agent in poorly ventilated spaces, methylene chloride vapors can build to high levels, causing direct harm to the central nervous system, metabolized to carbon monoxide, and potentially leading to asphyxiation.
- In the U.S., 17 workers died between 2000 and 2015 while using methylene chloride paint stripping products to refinish bathtubs.

Outstanding Bath Case Study - Introduction

- Outstanding Bath Refinishing, located in Milford, Massachusetts, has been providing bathtub restoration services since 2001
- Used approximately 400 to 800 gallons (an average of 600 gallons) of methylene chloride-based paint stripping product per year
- Applied for and received a grant from the Small Business Grant program at the Toxics Use Reduction Institute (TURI) to help identify an effective yet safer alternative.



Outstanding Bath Case Study – Green Screen

GreenScreen® for Safer Chemicals, developed by the nonprofit organization Clean Production Action, is a comparative chemical hazard assessment method.

In this method, a range of human health, environmental toxicity, fate, and physical hazard endpoints are evaluated for each chemical.



Outstanding Bath Case Study – Green Screen

Ecotoxicity and fate in the environment	Toxicity to humans (Group I)	Toxicity to humans (Group II)	Physical hazards
<ul style="list-style-type: none"> • Acute aquatic ecotoxicity • Chronic aquatic ecotoxicity • Other ecotoxicity studies (if available) • Persistence • Bioaccumulation 	<ul style="list-style-type: none"> • Carcinogenicity • Mutagenicity and genotoxicity • Toxicity for reproduction • Toxicity for development • Endocrine activity 	<ul style="list-style-type: none"> • Acute toxicity • Systemic toxicity and effects on organs • Neurotoxicity • Skin sensitisation • Respiratory sensitisation • Dermal irritation • Eye irritation 	<ul style="list-style-type: none"> • Reactivity • Flammability

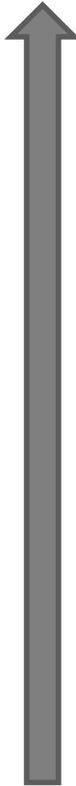
Outstanding Bath Case Study – Green Screen

C	M	R	D	E	AT	ST		N		SnS*	SnR*	IrS	IrE	AA	CA	P	B	Rx	F	
						single	repeated*	single	repeated*											
L	L	L	L	DG	L (oral)	H	L	M	M	L	DG	M	H	L	L	vL	vL	M	M	
					L (derm)															
					H (inh)															



Ratings: very low, low, medium, high, very high, data gap

Potentially Acceptable



Benchmark 4

Prefer – Safer Chemical

Benchmark 3

Use but Still Opportunity for Improvement

Benchmark 2

Use but Search for Safer Substitutes

Benchmark 1

Avoid – Chemical of High Concern

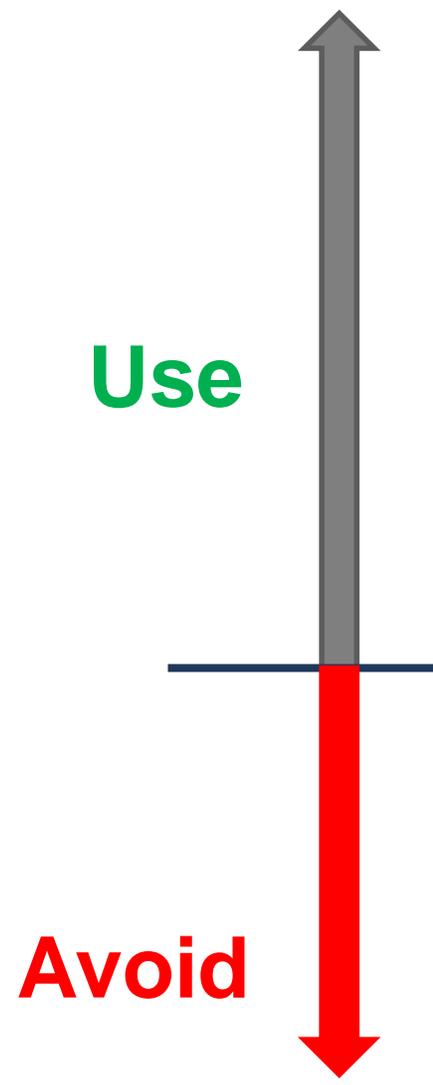
Upon completion of a GreenScreen assessment, the chemical receives one of four possible Benchmark scores.

Also LT-1 and LT – P1

Avoid

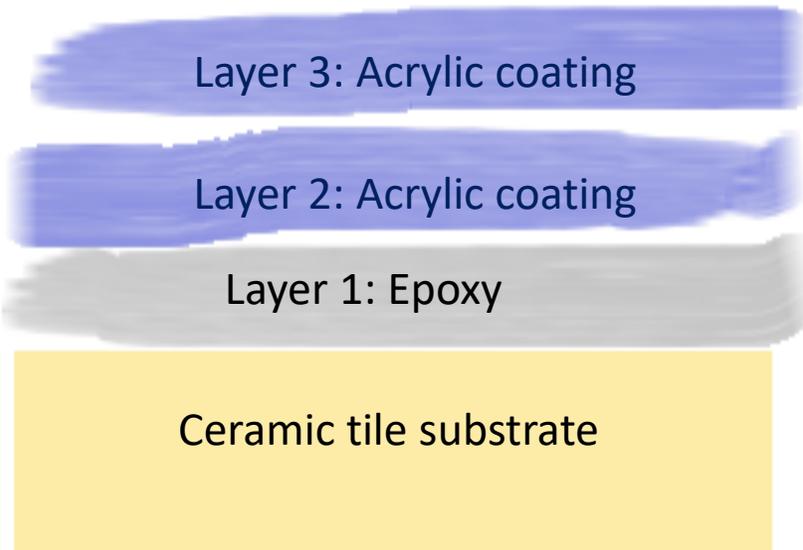


Outstanding Bath Case Study



Chemicals Used in Paint Strippers	Green Screen Benchmark
Water	4
DMSO	3
Acetone	2
DEGME	2
Dimethyl adipate	2
Dimethyl glutarate	2
Dimethyle succinate	2
1,3 Dioxolane	2
Formic acid	2
Methyl acetate	2
Naphthalene	LT-1
Ethyl benzene	LT-1
Methanol	1
Methylene chloride	1
NMP	LT-1
Toluene	1
Xylene	1

Outstanding Bath Case Study – TURI Lab Testing



Side View



Top View

The only paint stripper that demonstrated performance similar to the methylene chloride-based paint strippers and did not contain other Benchmark 1 chemicals (such as toluene, methanol, and naphthalene) was the Super Remover Professional Grade product.

Outstanding Bath Case Study – Field Testing Results

Type of Bathtub Coating	Approximate Percentage of Bathtub Refinishing Projects	Previous Results with Methylene chloride-based product	Results with Super Remover Professional Grade
Homeowners that used do-it-yourself painting kits that are fast and easiest to remove.	30%	Softened the coating for removal in less than 10 minutes.	Softened the coating for removal in less than 10 minutes.
Professional bathtub coating applications that used low quality coatings that are moderately difficult to remove.	50%	Softened the coating for removal in approximately 10 – 20 minutes.	Softened the coating for removal in approximately 15 – 25 minutes.
Professional bathtub coating applications that used high quality coatings that are time consuming and most difficult to remove.	20%	Softened the coating in some bathtub areas in 30 minutes, and other bathtub areas needed to be sanded.	Softened the coating in some bathtub areas in 30 minutes, and other bathtub areas needed to be sanded.

Outstanding Bath Case Study - Economics

Methylene chloride-based stripper:

Cost (including shipping) was approximately \$19 per gallon, or (based on 600 gallons/year) was \$11,400 per year.

Safer stripper (Super Remover Professional Grade):

Cost (including shipping) is approximately \$23 per gallon, or (based on 600 gallons/year) is \$13,800 per year.

Outstanding Bath Case Study

- Field testing of the non-methylene chloride-based paint stripper demonstrated that Outstanding Bath Refinishing could justify eliminating its use of methylene chloride strippers.
- No changes to their bathtub restoration process were necessary when switching to the replacement product.
- Although the cost of the replacement product is slightly higher than the methylene chloride-based product, it provides a much safer working environment for the bathtub refinishing workers and eliminates any costs that may be required to comply with OSHA requirements for using methylene chloride.