

## 2021 Case Study

### KANSAS HOSPITAL FOR A HEALTHY ENVIRONMENT

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Intern: Chelsea Line  
Major: Biomedical Engineering  
School: Kansas State University



#### Company background

The Kansas State University Pollution Prevention Institute 2021 healthcare intern worked with hospitals to identify products that contain high-priority Toxic Chemical Substances Act, or TSCA, chemicals and provide safer alternative options. The intern worked with six different Kansas hospitals ranging in size from 13 to 199 beds.

#### Project background

Kansas Hospitals for a Healthier Environment, or KH2E, is a two-year program hosted by the Pollution Prevention Institute, or PPI, and funded by the EPA. KH2E works to reduce environmental and health impacts of toxic chemicals in hospitals. Four categories targeted by KH2E for toxic source reduction include:

- 1) TSCA chemicals and mercury
- 2) DEHP and PVCs
- 3) cleaners
- 4) interiors and landscapes

In year one, 2019, the KH2E program worked with a single large facility, Ascension Via Christi, documenting a detailed chemical inventory, identifying TSCA chemicals and alternatives. During the second year, chemical inventories from rural hospitals were analyzed and more than 130 TSCA-containing products were identified. Ten high-priority TSCA chemicals were researched for source-reduction potential and recommendations for safer alternatives. This case summary represents year-two work that involved applying lessons learned from year one.

#### Incentives to change

Hospitals are in the business of caring for the health of their communities and were most interested in eliminating products that contained TSCA-priority chemicals.

PPI has partnered with hospitals, specifically Ascension Via Christi, to implement source-reduction recommendations for nearly two decades. As a result most hospitals have eliminated all mercury, reduced waste going to landfills and made significant strides toward reducing energy. The KH2E project focused on identifying toxic chemicals and materials identified as harmful to the environment and human health. Working with Ascension leadership, PPI plans to implement these toxics' reduction strategies throughout their network of 171 facilities in more than 24 states nationwide.

#### Projects reviewed for P2 potential

Although the KH2E program focused on source-reduction strategies in four areas, in the second year, hospital partners consistently requested PPI focus work in two of the four areas, chemical inventories and cleaners. TSCA, is a federal regulation that gives EPA authority to require reporting, recordkeeping, and in some cases, restrictions related to chemical substances and/or mixtures. In recent years EPA began the process of evaluating risk associated with TSCA-priority chemicals and in some cases, these evaluations have resulted in restricting the use of highly toxic chemicals.

##### 1. TSCA chemicals and mercury

Chemical inventories from six hospitals in various regions of Kansas were analyzed for TSCA 2014 Work Plan chemicals. The methodology included comparing CAS numbers of the chemicals on site with high-priority TSCA chemicals and identifying

safer alternatives. The cost difference between the safer alternatives and the chemicals found at facilities was neutral or minimal in most cases. More than 400 chemicals were analyzed and more than 130 TSCA-containing products were identified, of which a total of 10 priority-chemicals

were analyzed further for source-reduction potential.

## 2. Cleaners

Cleaners were also investigated for high-priority TSCA chemicals. Upon investigation, no cleaners were found to contain TSCA Work Plan chemicals.

### Summary of 2021 KH2E intern recommendations for various hospitals

Project	Health Impact	Annual Economic Impact	Annual Estimated Environmental Impact	Status
Elemental mercury	Neurotoxicity, developmental toxicity, and chronic nervous system and hepatic effects	N/A	15.0 lbs. of mercury	Planned disposal
Spray paints and thinner	Probable human carcinogen and reproductive toxicity	\$930	31 lbs. of xylene and ethylbenzene	Recommended
Enamels and primers	Probable human carcinogen and reproductive toxicity	\$870	259 lbs. of xylene and ethylbenzene	214 lbs. implemented; remaining recommended
Adhesives and sealants	Probable human carcinogen and reproductive toxicity	\$1,060	198 lbs. of methylene chloride, octamethylcyclotetra-siloxane, xylene,	Recommended
Lubricants, penetrant, and cleaners	Probable human carcinogen	\$334	14 lbs. of methylene chloride, TCE and trichloroethene	Recommended
Flux	Probable human	- \$ 2	1 lb. antimony	Recommended
<b>Total annual TSCA chemical reduction</b>		<b>518 lbs</b>		
<b>Total annual GHG Reduction 1,2</b>		<b>0.87 MTCO<sub>2</sub>e due to methylene chloride</b>		

<sup>1</sup>Does not include chemicals without a recommended safer alternative

<sup>2</sup>EPA P2 GHG Calculator with Cost, Apr. 7, 2016 & EPA WARM Tool- Version 14, Mar. 13, 2018