

# Evaluating Environmental Sustainability in the Perioperative Value Analysis Team

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# Introduction

Perioperative Value Analysis Team mission:



Cost



Quality



Patient Safety



Innovation



Sustainability

# Environmental Impact: U.S. healthcare & Perioperative Departments



8-10% of U.S. GHG



4 billion lbs MSW/yr



470,000 DALYS/year



30% waste  
2/3 regulated med waste  
3-6x > energy/sqft



Anesthetic gases  
HVAC  
Consumable devices/textiles

# Life Cycle Analysis: Laryngoscopes



Rusch Snaplight Fiber Optic Blade  
Rusch Green Spec FibreOptic Handle

	SUD	Reusable
Climate change (CO2 equivalents)	34.5	8.7
Carcinogen (comparative toxin equivalents)	411.3	3.5
Cost (\$/use)	\$15.77	\$6.16

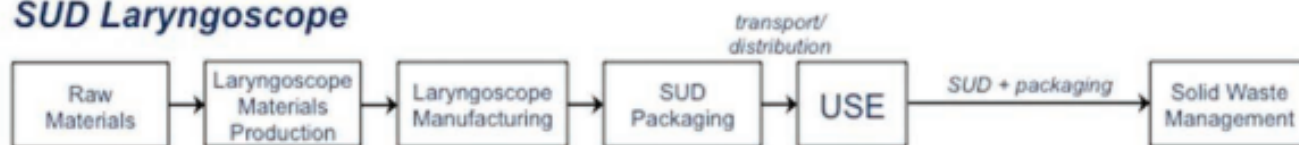


BOMImed Fiber Optic Blade  
BOMImed Fiber Optic Handle

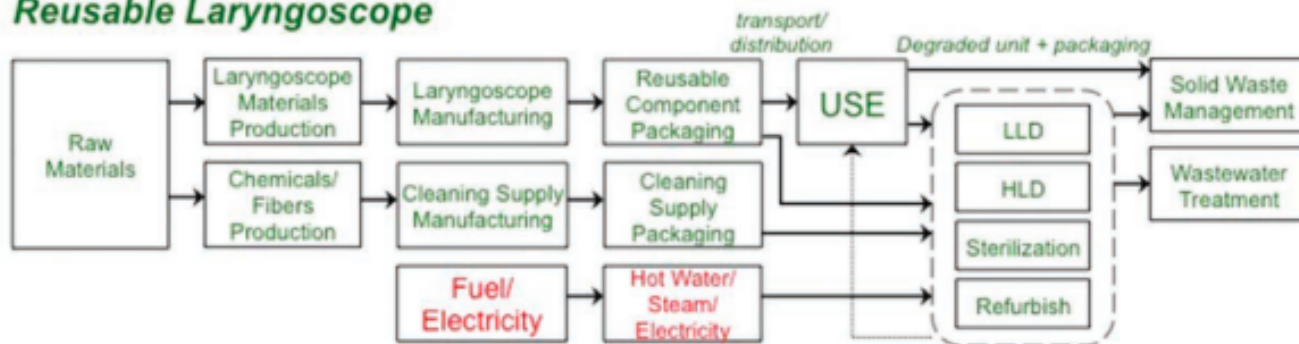
Sherman, Jodi D., Lewis A. Raibley IV, and Matthew J. Eckelman. "Life cycle assessment and costing methods for device procurement: comparing reusable and single-use disposable laryngoscopes." *Anesthesia & Analgesia* 127.2 (2018): 434-443.

## Laryngoscope LCA/LCC System Boundary

### SUD Laryngoscope



### Reusable Laryngoscope



### Life Cycle Cost Categories

*not included:*  
**Machinery/Capital Equipment**  
**Building Operations**

Initial  
Procurement  
+Refurbish  
Components

Cleaning  
Supply/Energy

#### LABOR

LLD  
 HLD  
 Sterilization  
 Refurbish

Waste  
Disposal Fees



## Environmentally Preferable Purchasing Principles

### Statement

In support of Kaiser Permanente's commitment to the communities we serve, we have developed these guidelines and specifications for purchasing decisions. Our purchasing decision-making process is a stewardship staff, and we encourage all services in their efforts to be sound. KP personnel are expected that KP expects suppliers to continuously develop price competitive products that conform to our EPP guidelines and specifications as defined in this document.

### Guidelines

KP prefers products and services that address environmental impacts throughout the lifecycle. Products and services should:

- Use **greener chemicals**, chemicals that are inherently less hazardous and release little to no toxic by-products across their lifecycle.
- Promote the use of **renewable materials** by increasing the use of sustainable, bio-based materials and reducing the use of fossil fuel-based materials.
- Support **healthy food systems** by sourcing food products that are local, seasonal, nutritious and produced in a way that minimizes degradation to human and environmental health and vitality.
- Promote **land stewardship**.
- Promote **sustainable energy**.
- Protect **clean air** by:
- Contribute to the availability of **bottled water products**.
- Minimize waste** by implementing the three "Rs": reduce, reuse and recycle.
- Use **environmentally sound waste disposal** technologies where reuse, reduction and recycling cannot be achieved.

### Specific Environmental Considerations

KP takes a precautionary approach to select products and services that meet or exceed state and state regulations and standards do not address. We are mindful of environmental and public health concerns brought to the forefront through independent and rigorous research. Therefore, KP is working to:

#### Avoid products containing the following chemicals and materials

- Persistent bioaccumulative toxic compounds** – Compounds that are toxic, persist in the environment and build up in the food chain, and can pose risks to public health by causing adverse effects to biological systems.
- Bisphenol-A** – A plastic chemical used in a variety of capacities that the National Institute of Health National Toxicology Program believes is hazardous to human reproductive and developmental health.
- Carcinogens, mutagens and reproductive toxic chemicals** – Chemicals that have been shown to cause cancer, a mutation of the genes, or damage to the development or function of reproductive systems.

Contact: Environmental-Supply-Chain@kp.org

This document will be updated as priority chemicals and concerns emerge.

- Halogenated flame retardants** – These flame retardants have been shown through controlled studies in laboratory animals to disrupt thyroid function, critical for brain development early in life, and potentially suppress immune systems, cause cancer, and disrupt normal endocrine function.
- Chlorine-containing flame retardants** – These flame retardants are suspected to accumulate in the liver and kidneys and be carcinogenic and reproductive toxicants.

and patients. ...s, and liver. ...al chemicals ...n, a known ..."any ...rbitides or ...actions," (with a few exclusions) U.S. EPA

### Implications for Manufacturers and Suppliers

This document is also meant to convey to manufacturers and suppliers the importance that Kaiser Permanente places on reducing our life-cycle ecological footprint while continuing to improve overall health. We count on our suppliers to heed this document and see it as encouragement to meet and exceed our expectations. We also expect our suppliers to complete our supplier process by providing KP with honest and complete information on corporate social responsibility and product performance as it pertains to environmental and public health.

#### Specific considerations should be to:

- Design products to contain high post-consumer recycled content
- Design products to be readily recycled, reprocessed, reused, and/or composted

## Specific Environmental Considerations for Purchasing

#### National and International Chemical and Material Standards

- Transport and package units in minimal packaging that is recyclable, non toxic and bio-based.
- Improve transport and production methods to reduce greenhouse gas emissions.

## Implications for Manufacturers and Suppliers

DEHP can leach out of the flexible PVC medical devices into the solution or medication it contains and subsequently into the patient. Animal studies indicate that DEHP is a potentially reproductive and development toxicant.

**Environmentally Preferred Purchasing** is the purchase of products and services whose environmental impacts have been considered and found to be less damaging to the environment and human health when compared to competing products and services.

**Life-cycle** A product's life-cycle refers to the environmental and public health implications of all phases of a product's existence; from raw material extraction or production, to manufacture, distribution, use, and disposal and includes all intervening transportation.

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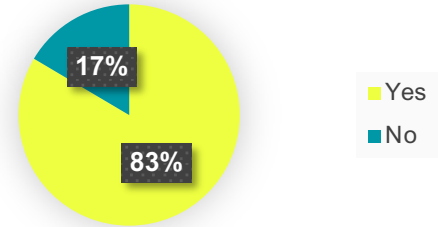
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# Why now?

- Significant cost savings: Kaiser Permanente, Beaumont
- University of Michigan Carbon Neutrality, final recommendations September 2020
- Opportunity to be leaders within Michigan Medicine, and for perioperative departments across Michigan
- Operating Room staff demonstrate willingness & excitement

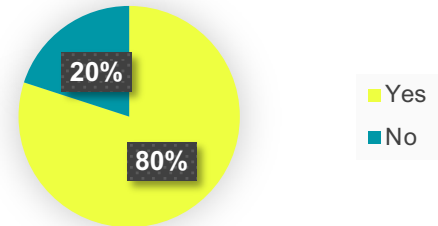
## Michigan Medicine

should become more  
Environmentally Sustainable



## Operating Rooms

should become more  
Environmentally Sustainable







# Adopt Environmentally Preferable Procurement and Supply Principles

- Modeled after *Kaiser Permanente's Environmentally Preferable Purchasing Principles*
- Perioperative-specific principles to evaluate potential products
- Incorporating:
  - General guidelines
  - Specific considerations about toxic or dangerous chemicals
  - Expectations for suppliers/manufacturers



## Environmentally Preferable Purchasing Principles Statement

### Statement

In support of Michigan Medicine's mission to improve the health of our patients, employees and surrounding community, the Perioperative Value Analysis Team (PVAT) within Michigan Medicine are committed to applying guidelines and specifications of Environmentally Preferred Purchasing to all major, strategic, and critical purchasing decisions. PVAT will evaluate the environmental impacts of products and services in their effort to select healthy and environmentally safe products. Michigan Medicine expects suppliers to continuously develop price competitive products that conform to our EPP guidelines and specifications as defined in this document.

### Guidelines

Michigan Medicine's PVAT prefers products that minimize environmental impacts throughout the lifecycle. These products should:

- Use greener chemicals, chemicals that are inherently less hazardous and release little to no toxic by-products across their lifecycle.
- Promote the use of renewable materials by increasing the use of sustainable, bio-based materials and reducing the use of fossil fuel-based materials.
- Protect clean air by minimizing pollutants.
- Contribute to the availability of clean water by minimizing water use and pollution and avoiding bottled water products.
- Minimize waste by implementing the three "Rs": reduce, reuse and recycle.
- Use environmentally sound waste disposal technologies where reuse, reduction and recycling cannot be achieved.

### Specific Environmental Considerations for Purchasing

Michigan Medicine's PVAT recognizes environmental and public health concerns brought to the forefront through independent and rigorous research, and thus aims to avoid products containing the following chemicals and materials:

- *Persistent bio accumulative toxic compounds* – Compounds that are toxic, persist in the environment and build up in the food chain, and can pose risks to public health by causing adverse effects to biological systems.
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Thank you for your time!  
Questions?