



Environmental Stewardship  
Procurement Case Study  
Resilient Flooring Case Study

Crossover 301  
GREENING THE  
SUPPLY CHAIN



# Environmental Stewardship

Lynn Garske, Environmental Stewardship  
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Crossover 301  
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# The Environmental Paradox for Healthcare

- In the course of providing health care to individual, we use chemicals and materials that are hazardous to human health
  - Medical Waste Incinerators
  - Mercury thermometers
  - Solid Waste
  - Health Impacts
- By eliminating or reducing hazards, we are eliminating environmental health impacts

# Vision

## Kaiser Permanente's Vision for Environmental Stewardship:

- We aspire to provide health care services in a manner that protects and enhances the environment and the health of communities now and for future generations.

# Vision

## George Halvorson, CEO

- “Our mission is and always has been to improve the health of the communities we serve, and that includes an emphasis on environmental stewardship. What’s good for our environment is going to be good for our members, our staff, and the community as a whole.”

## Jay Crosson, MD, Medical Director

- “As physicians, we think the Hippocratic Oath says it all: ‘Above all, do no harm’ – that credo applies to the environment as well as to our patients.”

# Values

- Concern for the health of communities extends to the air we breathe and the water we drink
- Leadership in the health care industry
- History of environmental commitment
- Precautionary Principle

# Focus Areas for Environmental Stewardship

Environmentally Responsible Purchasing

Green Buildings

Sustainable Operations

Transportation Systems Management

Comprehensive Food Policy

Comprehensive Chemical Policy

# Environmentally Responsible Purchasing

## KP incorporates environmental considerations into targeted national contracts

- Reducing the toxicity and volume of waste through product selection
- Increasing post-consumer recycled content
- Selecting reusable and durable products
- Eliminating mercury content and targeting other toxics for elimination
- Selecting products free from polyvinyl chloride (PVC) and di-2-ethylhexyl phthalate (DEHP)
- Implementing a comprehensive EPP policy that requires the disclosure of prioritized chemicals
- Educating GPO contractors on the basics and complexities of EPP

# Green Buildings

## Incorporating sustainable design and construction practices through environmentally sound facility templates used in all new construction and renovations

- Implementing efficient water and energy systems
- Using the least toxic building materials
- Recycling demolition debris, diverting from landfills
- Making use of daylight whenever possible
- Managing storm water to enhance surrounding habitats
- Reducing site development area (i.e. total gross square footage) to concentrate and limit paving and other site disturbances

# Sustainable Operations

The impact of energy conservation measures at KP has prevented more than 70 million pounds of air pollutants annually. In addition, the aggregate impact of pollution prevention activities eliminated the purchase and disposal of 40 tons of hazardous chemicals

- Waste minimization
- Safe electronic equipment disposition
- Optimal reuse of single use products
- Capital equipment redistribution
- Greening janitorial cleaning products
- Examining pest management practices to reduce pesticides
- Recycling and reuse of solvents
- Eliminated mercury

# Transportation Systems Management

- We sponsor “Spare the Air” and “Bike to Work” campaigns annually to reduce air pollution
- KP experienced a 7% increase in participation in the “KaiserRider” program to promote carpooling and transit use
- The Commuter Choice program reduces air pollution by decreasing vehicle trips

# Comprehensive Food Systems Approach

**Vision:** KP aspires to contribute to the creation of healthy food systems reflecting practices that are ecologically sound, economically viable, culturally appropriate and socially responsible

- Community Food Work
  - Farmer's Markets (25 total in 10/2005)
  - Community Supported Agriculture
- KP Food Work
  - Inpatient, vending, cafeteria, coffee cart, catering guidelines, contract change and demonstration projects

**Focus:** Seasonal , fresh, local food that is produced without synthetic pesticides or antibiotics given to animals in the absence of diagnosed disease

# Comprehensive Chemical Policy

## Vision:

- KP aspires to create an environment for its workers, members and visitors that is free from the hazards posed by chemicals that are harmful to humans, animals and the environment.



# Comprehensive Chemical Policy

Overall policy: Reduce use of materials that contain persistent bioaccumulative toxic chemicals (PBTs) and carcinogens, mutagens and reproductive toxins

Align with Environmentally Preferable Purchasing Policy

Educate purchasers and vendors

Advocate policy of full safety testing at all life stages

Strategy hierarchy:

- Disclosure
- Substitution for known alternatives
- Contracting for co-defined research goals

End Goal: Green Chemistry

# Chemical Issues

- ➔ Increasing health effects associated with chemicals that are not inherently compatible with biological life
- ➔ Currently there are about 80,000 chemicals in the U.S. inventory (100,000 in the EU) with 2,000-3,000 new chemicals added per year – regulations cannot manage this volume
- ➔ Full toxicity testing is completed on only 7% of the chemicals on the market produced in quantities greater than 1 million tons per year
- ➔ California's Proposition 65 remains the U.S.'s most progressive piece of chemical legislation to date

# Chemical Policy Work in the World and the U.S.

## EU's REACH\*

- REACH will require **industry** to prove that chemicals being sold and produced in the EU are safe to use or handle.
- As in the US, the current system requires **governments or affected parties** to prove the chemical is dangerous.

## Potential CA Legislation

- CA is tired of the continual surprises it faces such as the contamination of groundwater with methyl tertiary butyl ether (MTBE).
- A report discussing the 3 gaps in chemical management was released by UC Berkeley at the request of the CA state legislature. Data Gap, Safety Gap, Technology Gap

## Academia

- U-Mass Lowell Center for Sustainable Production
  - Alternatives Assessments
  - Chemical Policy
  - Green Chemistry
- UC Berkeley
  - Eyeing U-Mass model for West Coast Center
  - Leading information gathering for CA State Legislature

\*Registration, Evaluation, and Authorization of Chemicals policy

# KP Chemical Policy Work

## Policy Work

- Regional President's Group
- Medical Director's Group
- National Leadership Team
- Board of Directors

## Implementation Work

- Environmental Stewardship Council
- Purchasing – i.e. Mercury and PVC
- Chemical Policy Committee
- IH is critical to this process



# Procurement Case Study

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# Overview – Casework Project

## Details

- Limited assessment

## 7 Vendors

- Sourcing
- Manufacturing
- Use
- Post-Use



# Sourcing

## PBT's, carcinogens

- binders, pesticides

## Rapidly renewable

- wheat, recycled wood

## Security of supply

- capacity available

## Packaging

- Minimal, strapping

## Transportation

- rail, truck

## FSC, SCS certified

- recovered wood/not

## Free of added formaldehyde

- binder

## Sustainable agricultural practices (wheat)

# Sustainable Manufacturing

Waste minimization

Water minimization

Non-renewable energy minimization

Reduced emissions during manufacturing

Environmental data:

- US EPA - Toxics Release Inventory - <http://www.epa.gov/triexplorer/>
- Scorecard - <http://www.scorecard.org/>
- Environment Canada - [http://www.ec.gc.ca/pdb/npri/npri\\_home\\_e.cfm](http://www.ec.gc.ca/pdb/npri/npri_home_e.cfm)

Worker injury data



# Use: IAQ and Performance

## IAQ

- CHPS 1350 emissions whole unit testing ([www.chps.net/](http://www.chps.net/))
- CHPS Carcinogen standards
- Green Seal ([www.greenseal.org/recommendations.htm](http://www.greenseal.org/recommendations.htm))
- Building Green, Inc. ([www.buildinggreen.com/menus/subtopics.chm?TopicID=5](http://www.buildinggreen.com/menus/subtopics.chm?TopicID=5))

## Performance

- Machinability
- Aesthetics
- Durability
  - Strength
  - Water Resistance
- Maintenance / IAQ
- Cabinet Shop Findings
  - Wheat PB
  - Recovered wood MDF
- Finishes

# Post Use

- Closed Loop Recyclable
- Readily down-cyclable
- Supplier Facilities End of Life Disposition



# General Criteria

Environmental Statement, Mission

Facility Locations

Dimensions

Quality Assurance



# Resources – Fiberboard, Isocyanates

Green Seal Choose Green Report  
[http://www.greenseal.org/cgrs/CGR\\_PB  
&MDF.pdf](http://www.greenseal.org/cgrs/CGR_PB&MDF.pdf)

ISOCYANATES by Eric LeBreton  
[http://www.tc.gc.ca/canutec/en/articles/  
documents/isocy.htm](http://www.tc.gc.ca/canutec/en/articles/documents/isocy.htm)

Isocyanates - Risk Assessment and  
Preventive measures, Nordic  
supervisory authorities, - Copenhagen  
2000  
[http://www.arbeidstilsynet.no/publikasjo  
ner/rapporter/rapport1eng.html](http://www.arbeidstilsynet.no/publikasjoner/rapporter/rapport1eng.html)

OSHA info -  
<http://www.osha.gov/SLTC/isocyanates/>

Preventing Asthma and Death  
from Diisocyanate Exposure  
NIOSH ALERT: 1996  
DHHS (NIOSH) Publication No. 96-  
111  
[http://www.cdc.gov/niosh/asthma.  
html](http://www.cdc.gov/niosh/asthma.html)

report on particleboard/mdf  
[http://www.fiberfutures.org/pages/  
fiberlinks.html](http://www.fiberfutures.org/pages/fiberlinks.html)





# Resilient Flooring Case Study

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# Alternatives to Poly Vinyl Chloride

## Why Do This?

- KP spent \$24.5 million in slip / trip / fall compensation in California in 2003 alone
- Concern about cleaning chemicals used to maintain vinyl composition tile (VCT) and sheet products
- KP is committed to removing polyvinyl chloride (PVC) products from our facilities due to adverse environmental and health effects
- KP is the first hospital system in the nation to so fully address the issue of improved flooring and system-wide implications for business and health

# Background Research

## Resilient Flooring Research Committee

- National Facility Services
- Environmental Stewardship director
- National Environmental Health & Safety industrial hygienist
- Environmental Services consultant
- Interior Design professional
- Indoor Environmental Quality and Materials specialist
- Healthy Building / Environmental specialist

# Evaluation Criteria

## Performance

- Maintenance (frequency of task, length of task, amounts of water and chemicals necessary, toxicity of chemicals necessary)
- Stain Resistance (betadine, stains, fixatives, disinfectants)
- Ease of installation
- Durability
- User Acceptance

## Health & Environmental Criteria

- Raw Materials
- Manufacturing
- Off-Gassing
- Final Disposal

## Health Care Product Line Availability

## Cost

# Flooring Alternatives

Natural Linoleum

Laminate

Rubber

Polymeric

# Evaluation Process

**Manufacturer Data**

**Interviewed References and Conducted Site Visits**

**In-House Stain Testing**

- t = 0, t = 24 hours

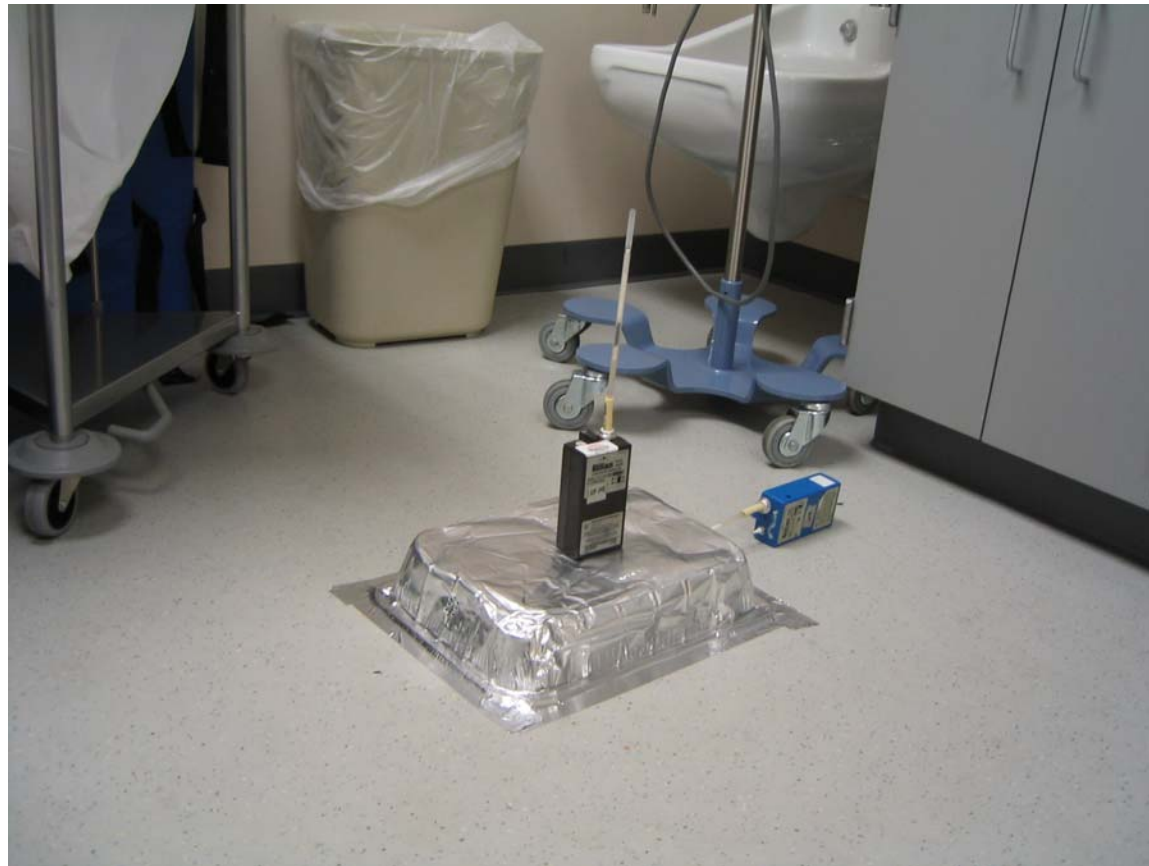
**In-house VOC Testing**

- 4 pilot sites
- t = 0, t = 30 day, t = 90 day, t = 6 mo, t = 9 mo, t = 1 yr

**Staff Satisfaction Surveys**

**Track Installation and Maintenance Costs**

# VOC Testing – Soiled Utility Room



# VOC Testing – Patient Bedside



# Off-Gassing Tests

Sampled concentrated off-gassing and ambient in Exam and Utility rooms, and outdoors and compared to PVC

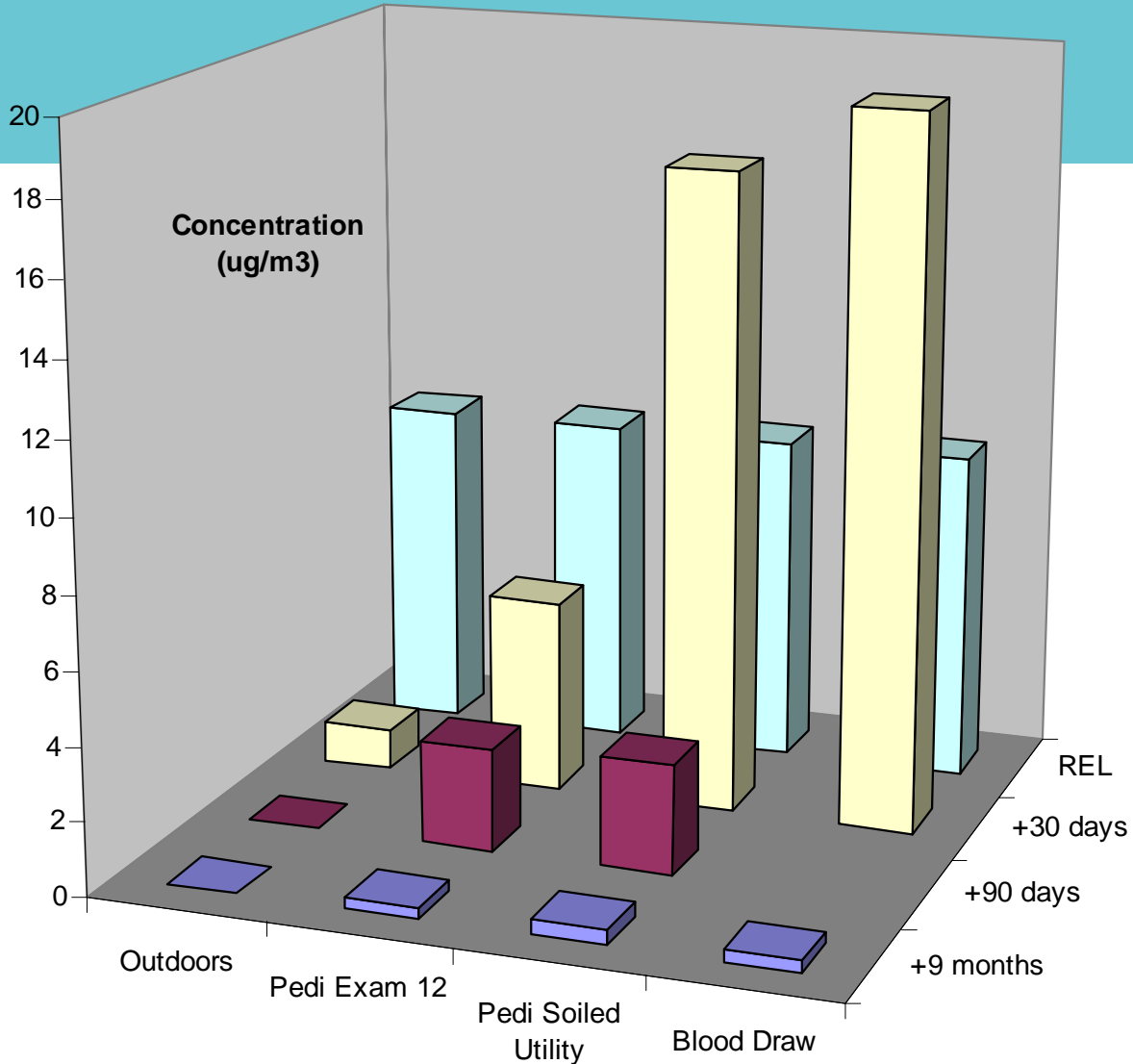
## Multisorb Sampling Tubes

- Envirochem Inc., (Model ST-032), Tenax, Amborsorb XE-340 and activated charcoal, in series
- US EPA Method TO-17 “Determination of VOCs in Ambient Air Using Active Sampling onto Sorbent Tubes”
- US EPA Method TO-1 “Determination of VOCs in Ambient Air Using Tenax Adsorption and GC/MS”

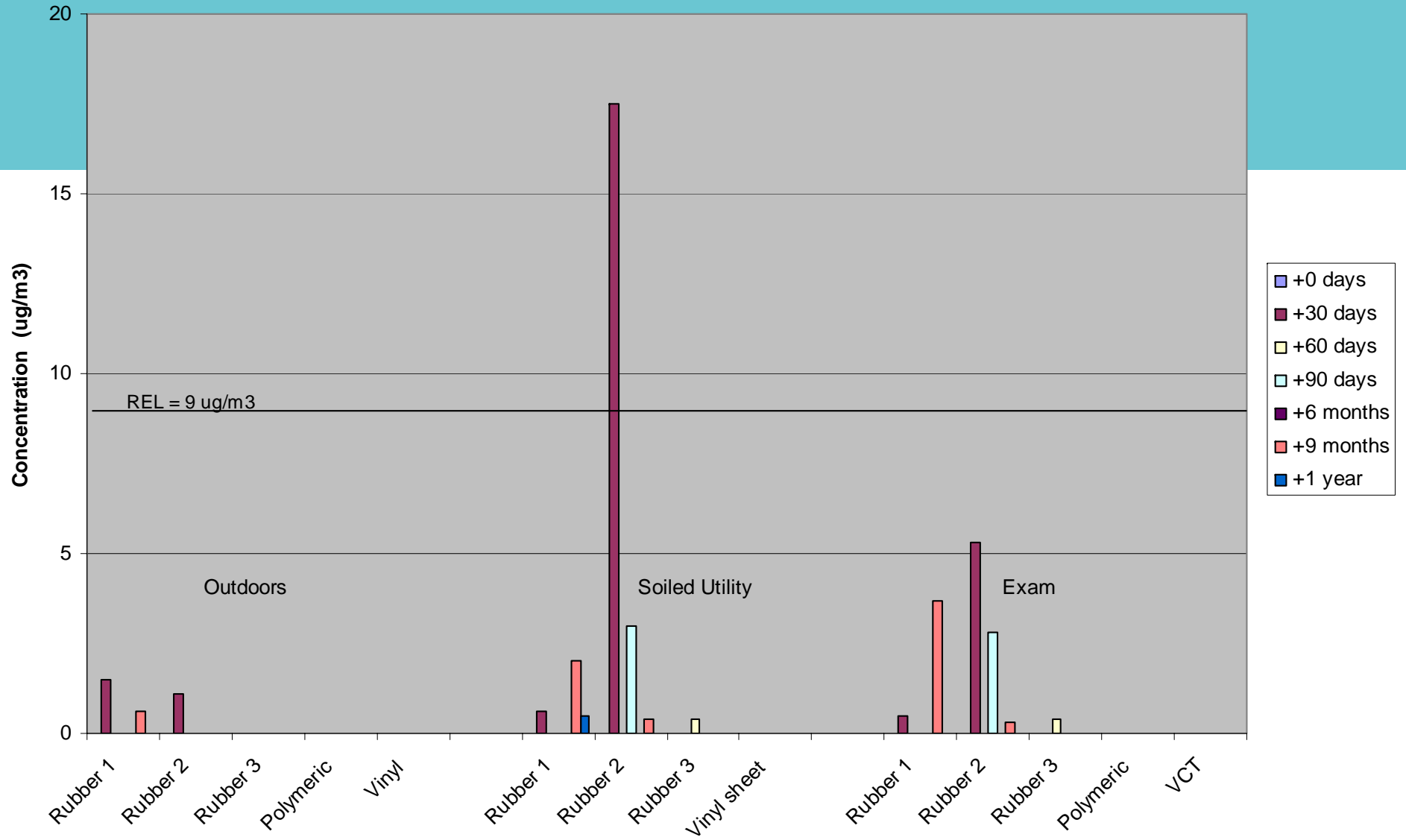
## Aldehydes

- Sep-Pak XPoSure Aldehyde Samplers, (Waters Corp., # WAT047205), 2,4-DNPH chemistry
- US EPA Method TO-11 “Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge followed by HPLC”

# Napthalene Levels Rubber Flooring



## Naphthalene Summary Comparison



# Advantages of New Resilient Flooring Products

## Potential short term savings

- no concrete sealant required for new construction

Proven long term savings from reduced maintenance time and chemical use

Improved traction and reduced slip / trip / falls

More comfort underfoot

Better acoustic properties

Stain resistance

- Far outperform vinyl in betadine stain removal

Mold resistance

Improved durability for high traffic / high maintenance environments, such as ORs

# Health Benefits

- Studies have indicated that PVC can trigger eczema, asthma and other respiratory problems
- Reports of staff absenteeism due to cleaning products and processes on PVC floors
- No shrinkage over times reduces gaps between seams and improves infection control
- Eliminating PVC reduces dioxin and mercury releases to the environment

# Aesthetic Implications

## No more shiny, slippery floors!

- Shiny floors cause confusion in sleepy, elderly or disoriented patients

Ecopolymeric floors have a “sheen” which can be buffed without adding slipperiness



Broad range of aesthetic looks to suit facility design style

# How Are These Products “Green”?

When PVC alternatives are used, fewer PBTs are put into the environment

- PBTs are linked to cancer, endocrine disruption and developmental disorders

Low maintenance requirements with fewer chemicals that have lower VOCs than traditional cleaning chemicals used on PVC

Long-lasting product, therefore longer replacement cycle and increased cost savings

# Questions?

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