

# Who are the South Valley Partners for Environmental Justice?



- A partnership of:
  - Community members
  - Rio Grande Community Development Corporation
  - Bernalillo County, Office of Environmental Health
  - UNM, Community Environmental Health Program
- The mission of the SVPEJ is:
  - to promote healthy, sustainable communities through participatory land-use decision making

# Why are we here today?

To provide the community with

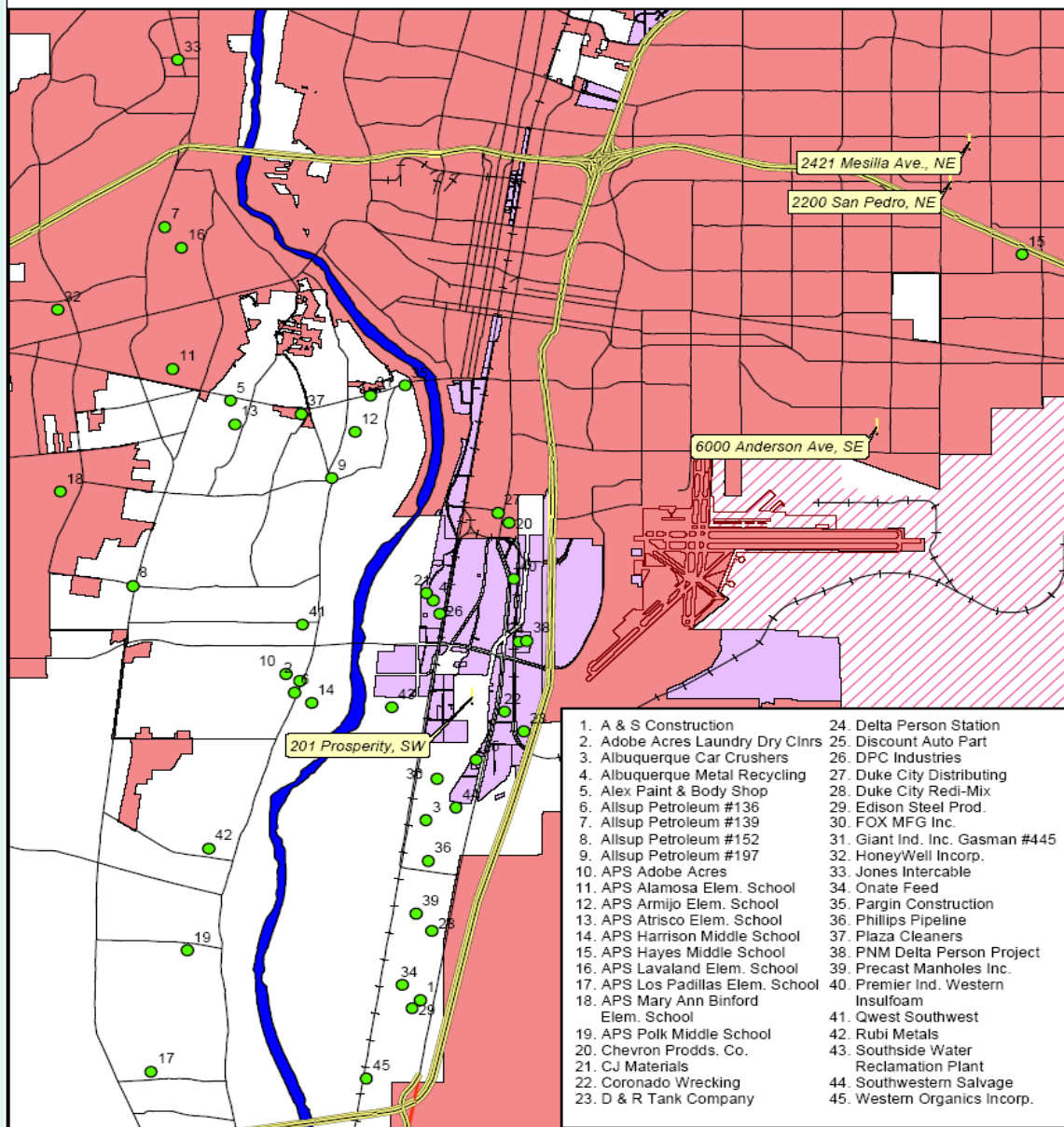
- results from our air quality monitoring study
- possible sources of air pollutants
- potential health effects from exposure to these air pollutants
- information on how to reduce exposures to these air pollutants

# Why was the study done?

To answer residents' concerns about

- potential air pollutants (VOCs) coming from industry
- the potential for these VOCs to impact health
- whether VOC levels differed among Mountain View, Los Padillas, & Pajarito Mesa

Air Monitoring Stations and Registered Air Release Locations



Map produced by Bernalillo County Environmental Health



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### Legend

- ! Air Monitoring Stations
- EPA Air Release
- Albuquerque
- Kirtland AFB
- M-2 Zoning



# What are volatile organic compounds (VOCs)?

## Compounds that

- evaporate easily and may be explosive
- have noticeable odors
  - gasoline
  - nail polish
- can easily enter the bloodstream when inhaled
- react with the body and are often toxic
- react with other air pollutants to form ozone

VOCs can cause cancer and other illnesses

# Where do VOCs come from?

- Burning fuels like gasoline, heating oil & painted lumber
- Industrial processes
- Preserved woods
  - Landscaping timbers
  - Laminated flooring and paneling
- Chemicals in furniture and carpeting
- Paint
- Cleaning products
- Dry cleaning
- Smoking



# How did we conduct the study?

- 29 study participants
  - 14 Mountain View residents
  - 8 Pajarito Mesa residents
  - 7 Los Padillas residents
- 3 badges
  - Indoor, outdoor, and on person
- 11 different volatile organic compounds
  - benzene, carbon tetrachloride, chloroform, ethyl benzene, methylene chloride, xylenes, MTBE, styrene, tetrachloroethylene, toluene, and trichloroethylene
- 3 continuous days
- Activity logs



# How did we communicate results?

- All participants received their results by letter (in Spanish or English)
- Participants with high pollutant amounts, received personal consultation
  - Pollutants were generally associated with house cleaning, dry-cleaning, gasoline pumping, and painting activities

# How did we determine whether pollutant amounts caused harm?

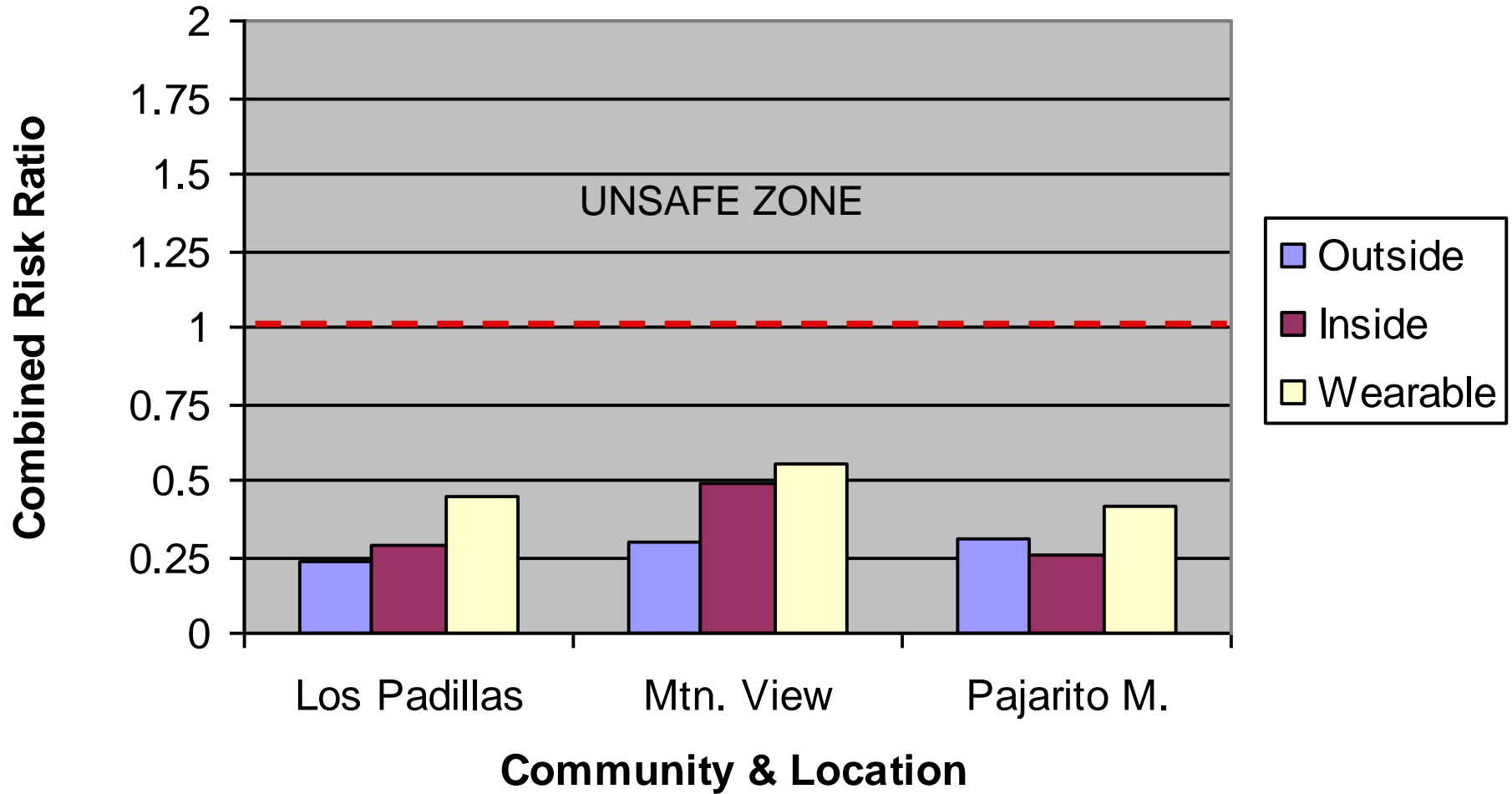
- Each pollutant amount from each of the monitoring badges was compared with Environmental Protection Agency (EPA) values
- When dividing the observed pollutant amount by the EPA value, if the result was
  - Greater than 1, the pollutant amount was considered unsafe
  - Less than 1, the pollutant amount was considered “safer”
- EPA values are used for SCREENING ONLY -- identify POTENTIAL for concern, not actual likelihood of illness
- *First step* in evaluation



# Were the pollutant amounts of the monitoring badges considered safe based on EPA's non-cancer values?

- Yes
- When all of the pollutant amounts were added together, they were less than 1
- In general,
  - personal exposures were greater than indoor exposures and indoor exposures were greater than outdoor exposures

# Non-cancer Risk Ratios

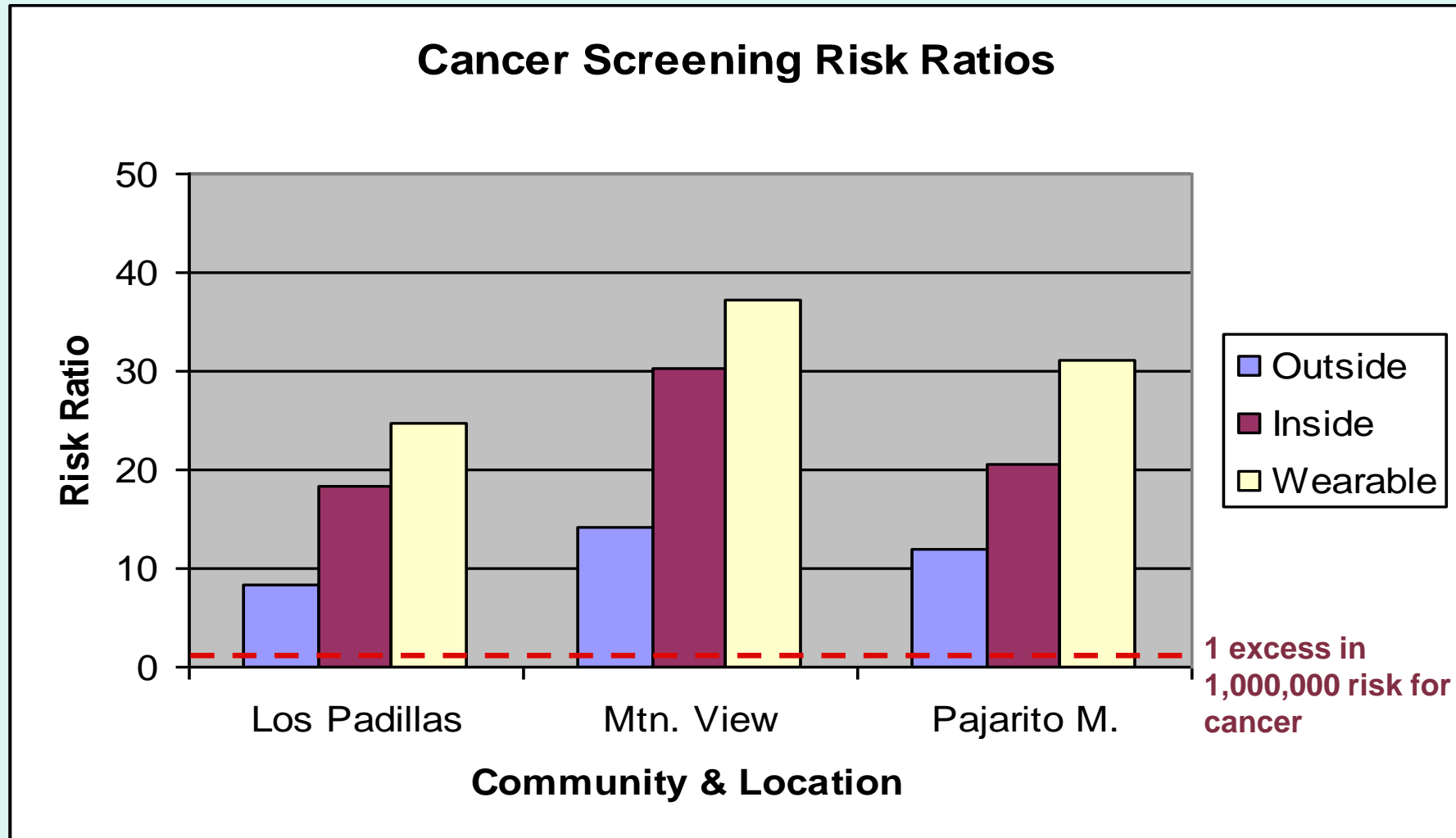


# Were the pollutant amounts of the monitoring badges considered safe based on EPA's cancer values?

➤ No

- When all of the pollutant amounts were added together, they were greater than 1
  - all three communities
  - outdoors, indoors and personal exposures

# Cumulative excess cancer risks

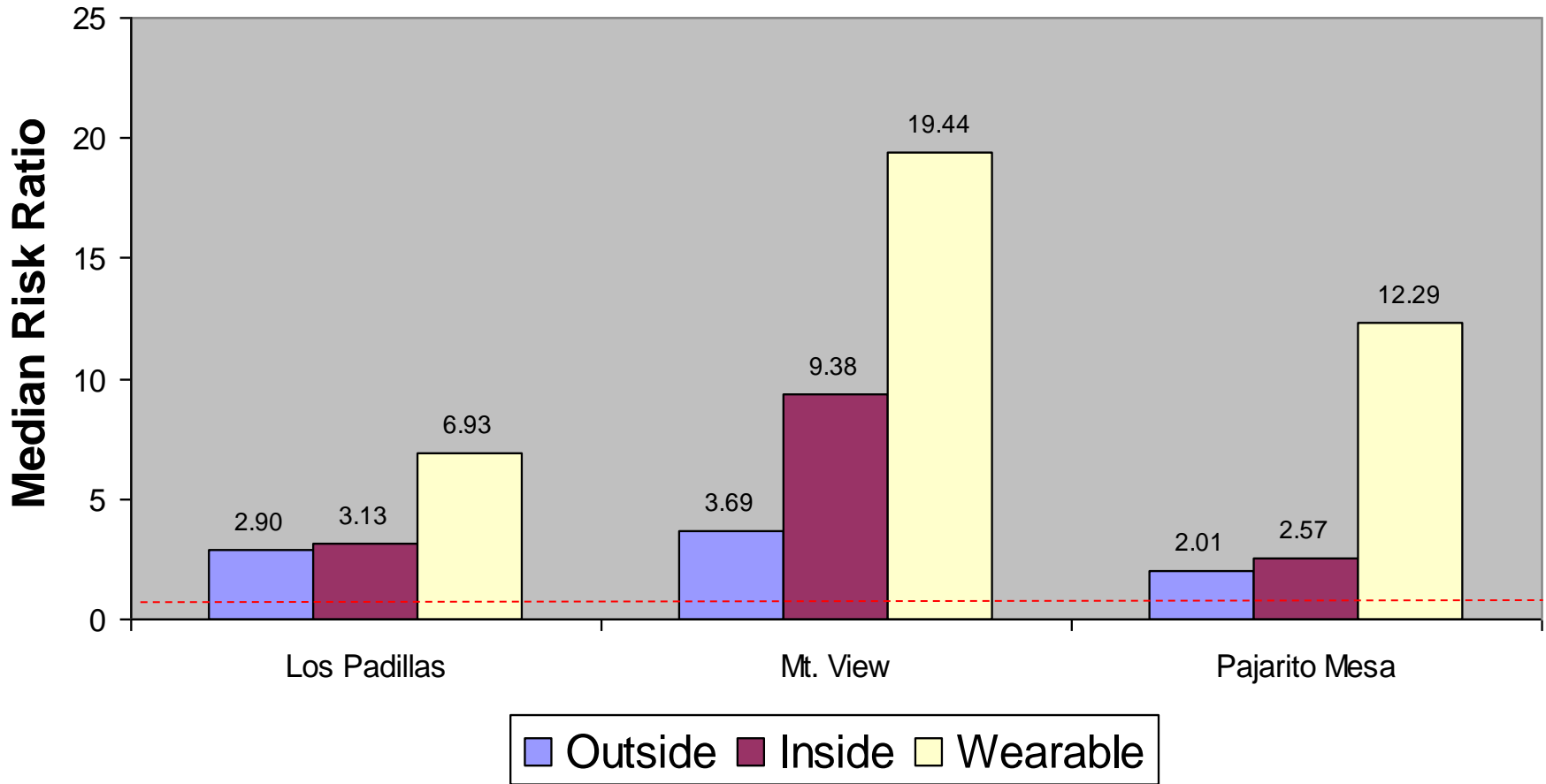


- Because the ratios are greater than 1, further investigation is needed.

# Which pollutants had amounts that were considered unsafe?

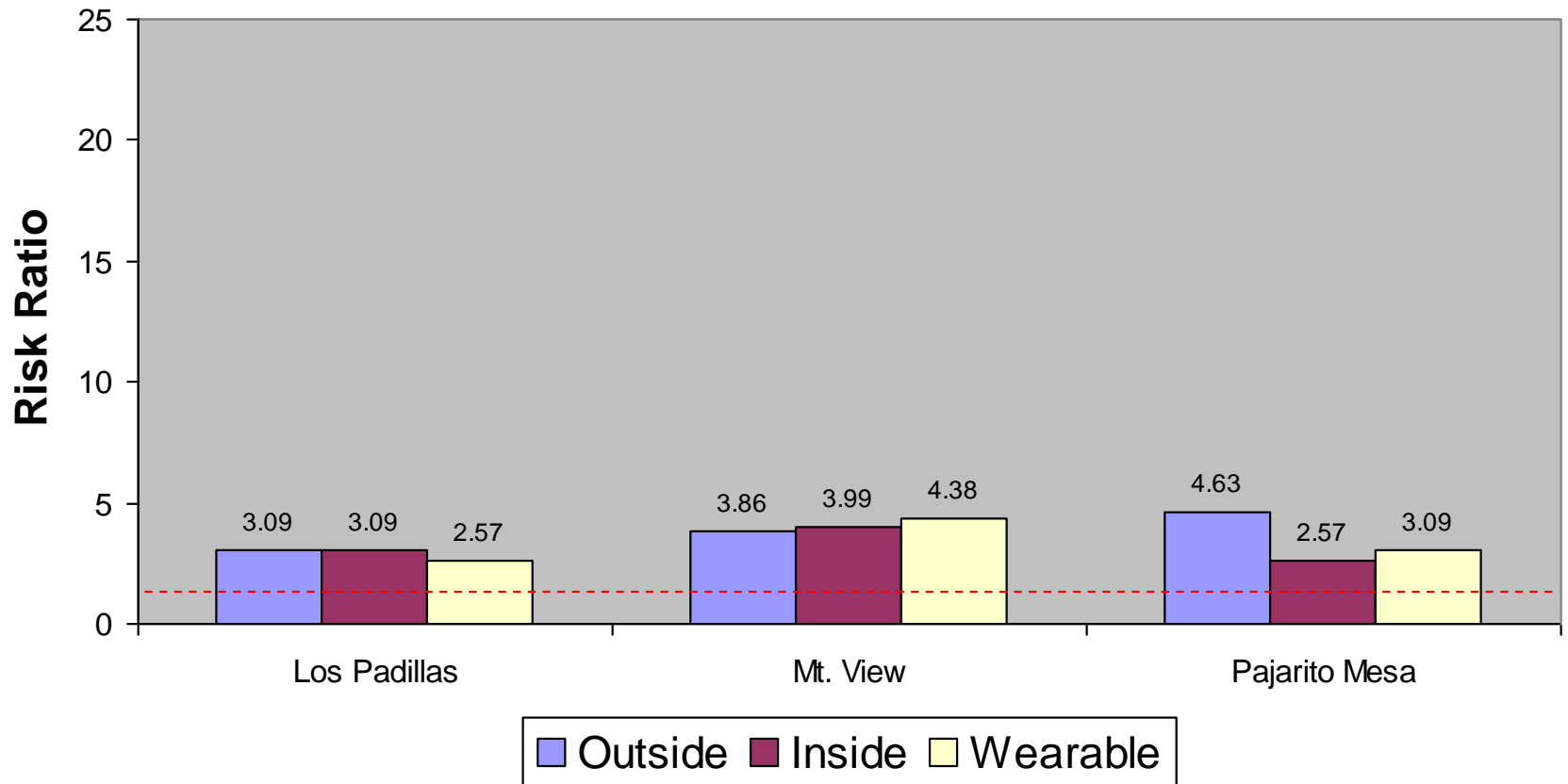
- Benzene
  - WD-40, gasoline, cigarettes having processed tobacco, motor oil, paint thinner, lacquer, paint stripper, furniture polish and spray, engine degreaser, spray paint
- Carbon tetrachloride
  - Household usage was banned in the U.S. in the 1970's. World-wide there are high amounts of carbon tetrachloride in the air
- Chloroform
  - Waste water from sewage plants, chlorinated drinking water, and anti-bacterial soaps with triclosan
- Tetrachloroethylene
  - Metal degreasers and dry cleaned clothing

# Benzene



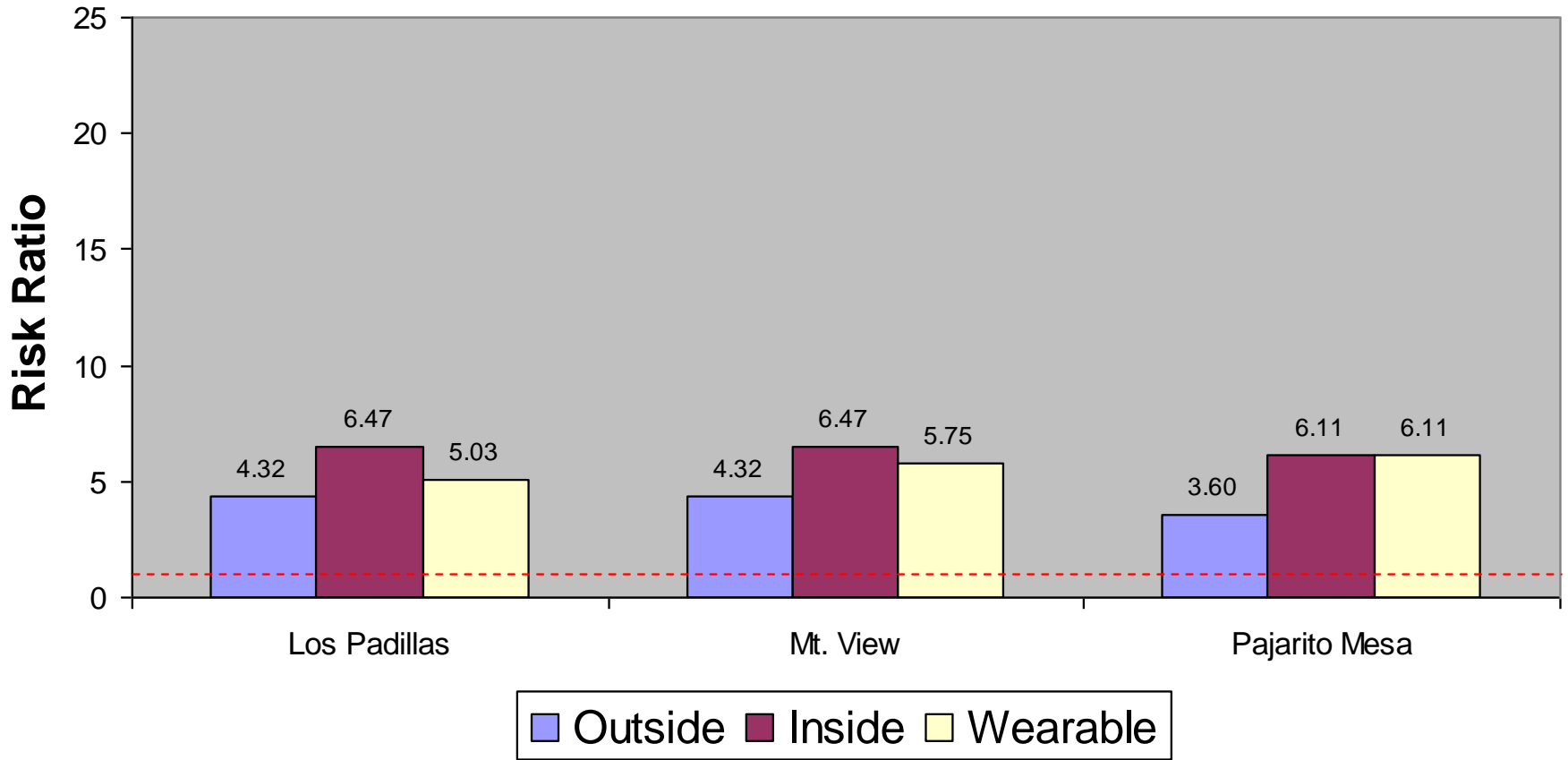
----- Indicates 1 excess in  
1,000,000 risk for cancer

# Carbon Tetrachloride



----- Indicates 1 excess in  
1,000,000 risk for cancer

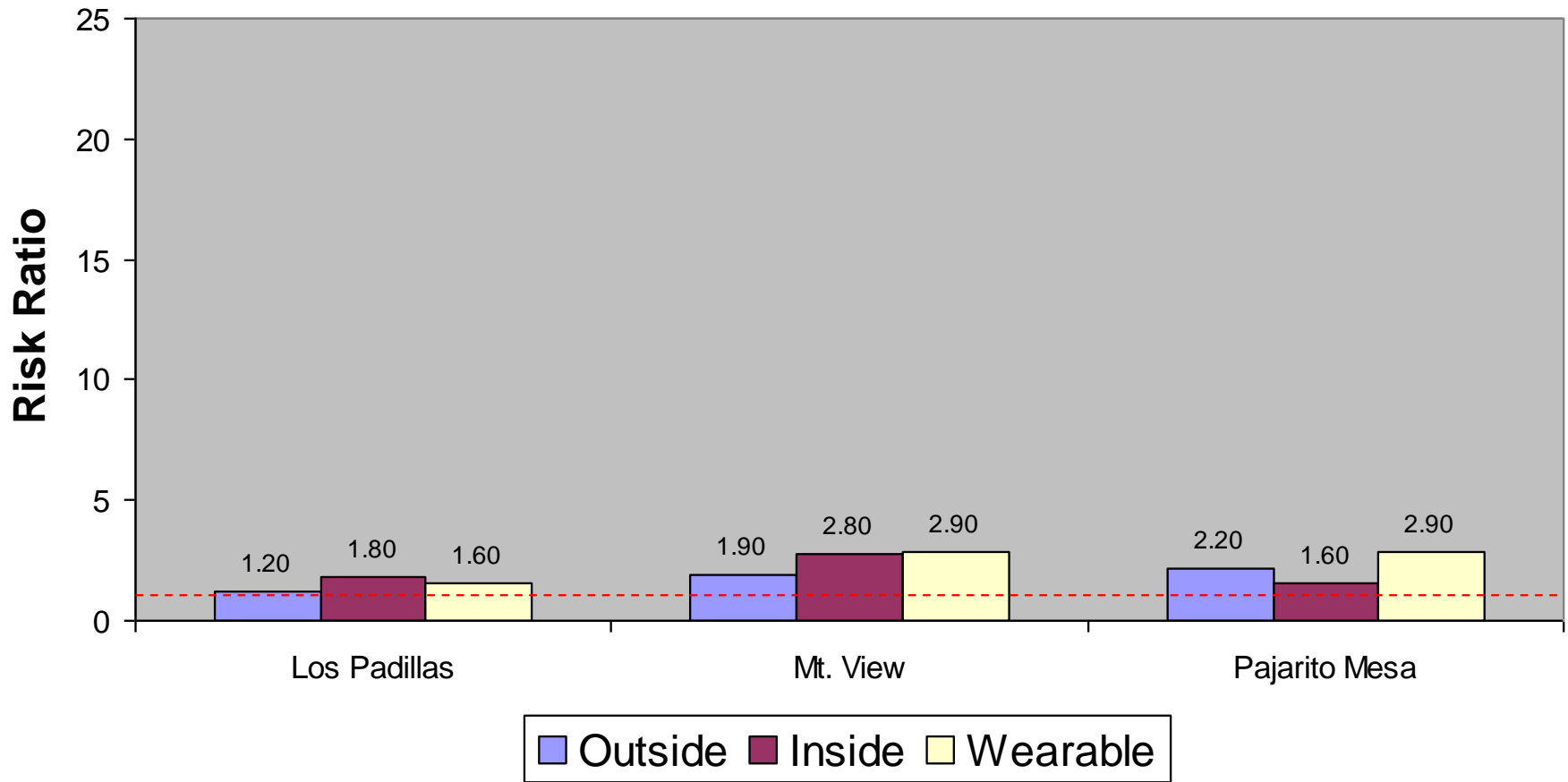
# Chloroform



----- Indicates 1 excess in  
1,000,000 risk for cancer



# Tetrachloroethylene



----- Indicates 1 excess in  
1,000,000 risk for cancer

# How can I reduce my exposures?



- **benzene**

- When fueling your car stand up-wind
- Don't smoke or allow others to smoke in your home
- Ventilate your home when painting and wear a mask

- **chloroform**

- Do not use products that contain triclosan

- **tetrachloroethylene**

- Air out clothes outside that have been dry cleaned
- Do not use metal degreasing products

- **carbon tetrachloride**

- Do not purchase pesticides from other countries



# What does it mean?

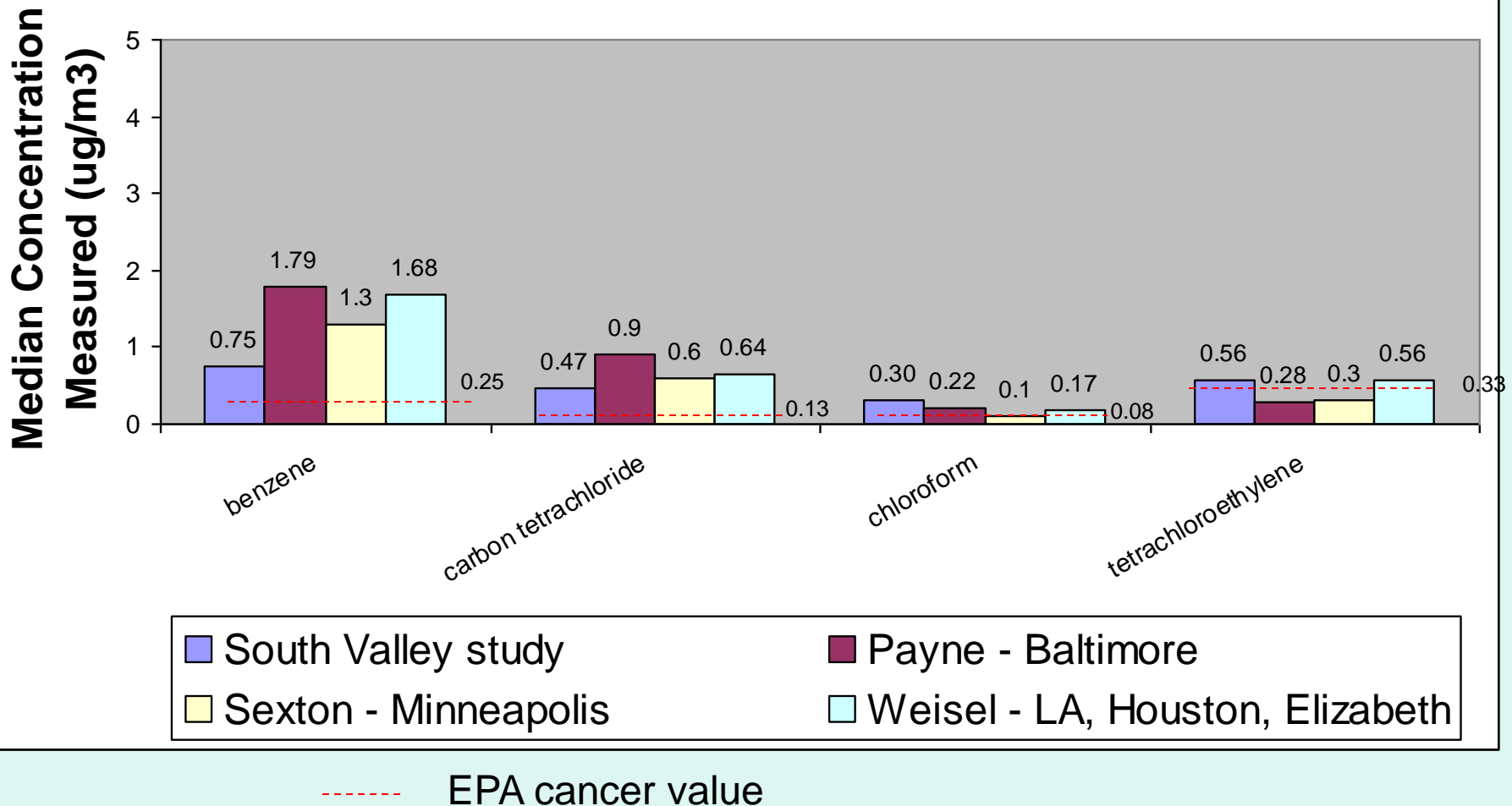
- Based on our study results, we are concerned about amounts of:
  - Benzene
  - Carbon tetrachloride
  - Chloroform
  - Tetrachloroethylene
- These chemicals were problems in all three communities, although amounts differed
- In general
  - personal exposures were greater than indoor exposures and indoor exposures were greater than outdoor exposures

# How do VOC concentrations in the SV compare to other US communities?

- Comparison studies in
  - Minneapolis
  - Baltimore
  - LA, Houston, Elizabeth (NJ)
- Studies used similar methods
- SV had lower amounts than other communities
  - Tetrachloroethylene - higher for personal, outdoor, indoor exposures
  - Chloroform – higher for outdoor exposures only
  - Benzene – higher for personal exposures only
  - Carbon tetrachloride – lower for personal, outdoor, indoor exposures

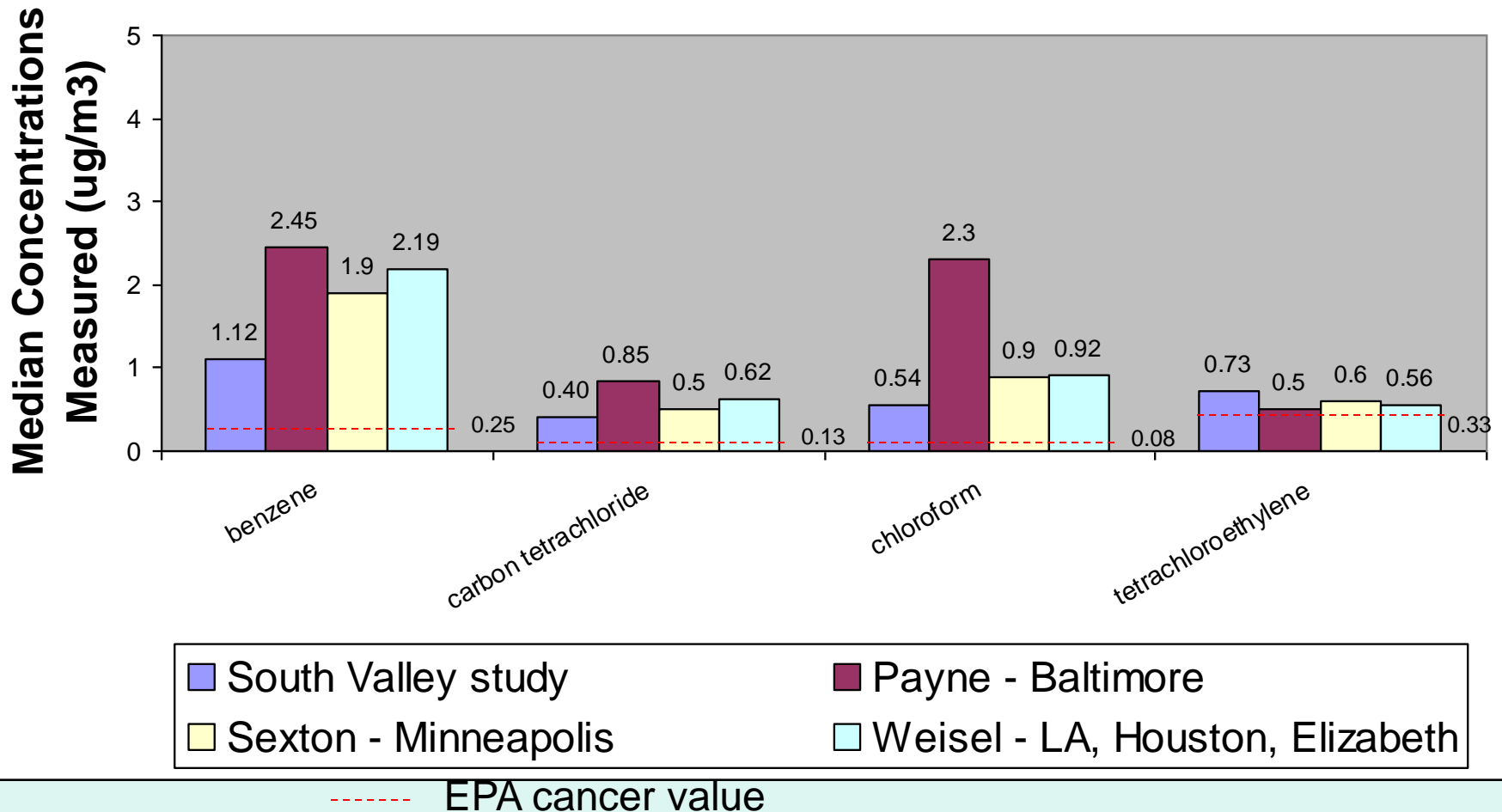
# Other communities – outdoor amounts

## Outdoor Exposure Comparisons



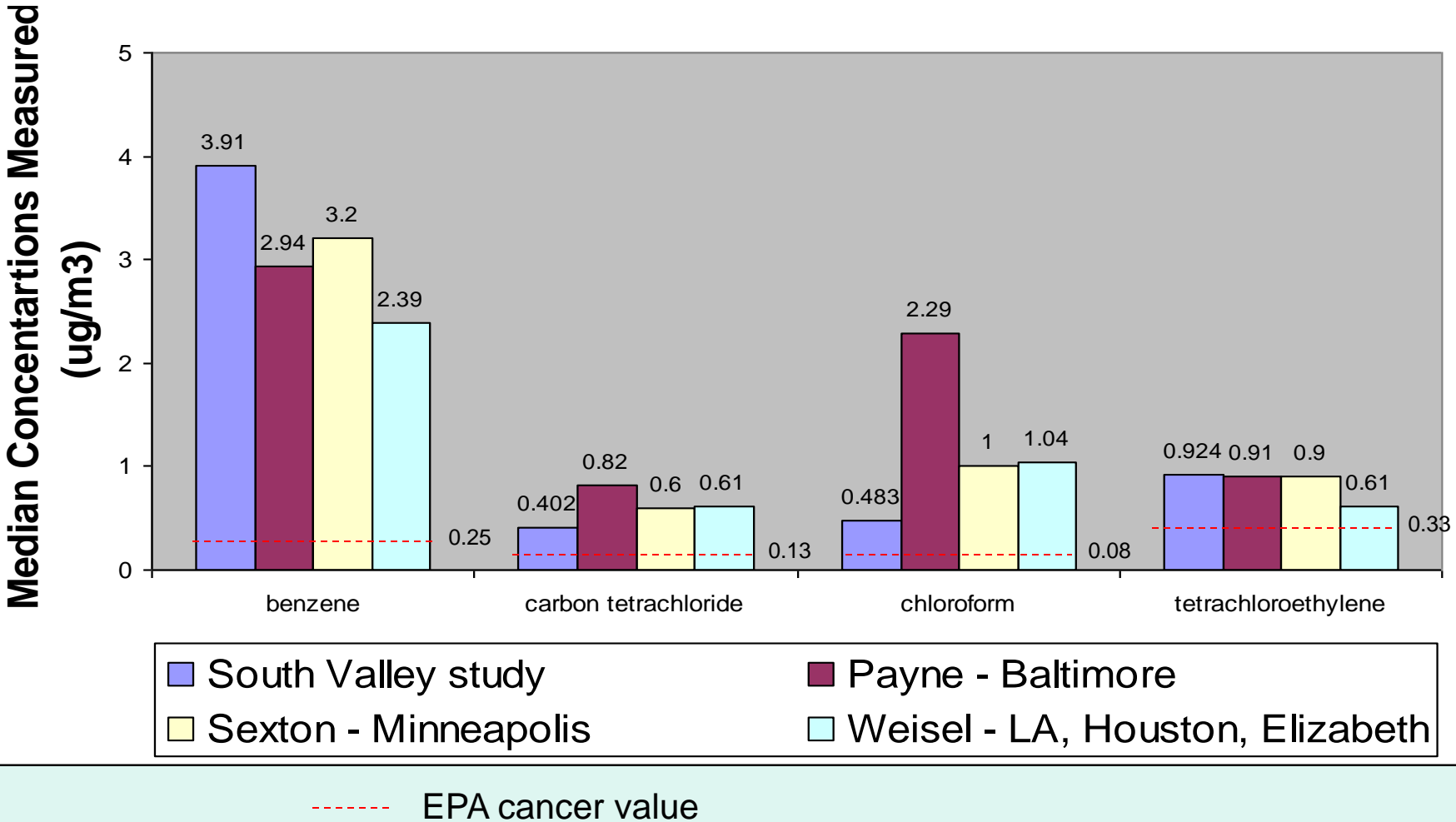
# Other communities – indoor amounts

## Indoor Exposure Comparisons



# Other communities – personal amounts

## Personal Exposure Comparisons



# Cancer in the Mountain View

- Based on a previous study comparing observed cancers in Mountain View with Bernalillo County:
  - Mountain View had a greater than expected number of lung cancer, bladder cancer, brain cancer, thyroid cancer, and leukemia cases
  - VOCs may contribute to lung cancer, bladder cancer and leukemia; however factors other than exposure to VOCs could also cause these types of cancers.
  - For example, cigarette smoking is known to cause lung cancer and bladder cancer.



# Other considerations

- Short sampling period – 3 days
- Small sample size – 29 participants
- How does EPA calculate their “safe” values
- Did not consider place (e.g., industry) specific air pollutants, but rather community air pollutants
- Patterns of personal exposure may vary based on length of stay in community, length of duration at work, wind patterns, etc.
- Illness may be based on an individual’s susceptibility
- VOCs can come from industrial emissions and from chemical use in the home
- You can reduce your VOC exposure by using products that are environmentally safe

# Potential Follow-up

- Identify funding for a more in-depth study
- Identify the types and quantities of pollutants that industries are emitting
- Strengthen the air monitoring network and sample for more types of pollutants
- Provide residents with access to health care providers that understand the links between environmental quality and health
- Educate residents on ways to reduce their pollutant exposures
- Inform health care providers and policy makers of study results and pollutants of concern

# References

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# Contact Information

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