

Air Quality Assessment in the South Valley

Presented by the South Valley Partners for
Environmental Justice (SVPEJ)

August 2007

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Who are the South Valley Partners for Environmental Justice?

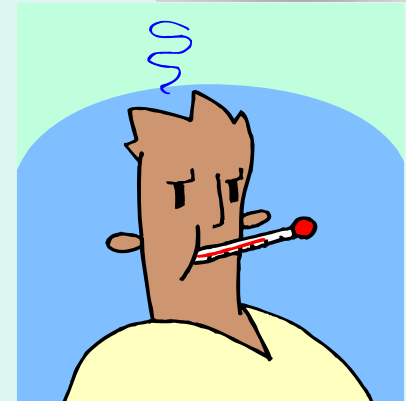


- A partnership of:
 - Community members
 - Rio Grande Community Development Corporation
 - Bernalillo County, Office of Environmental Health
 - UNM, Community Environmental Health Program
- The mission of the SVPEJ is:
 - to research the impacts of land use decisions on public health and involve community in land use decisions

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

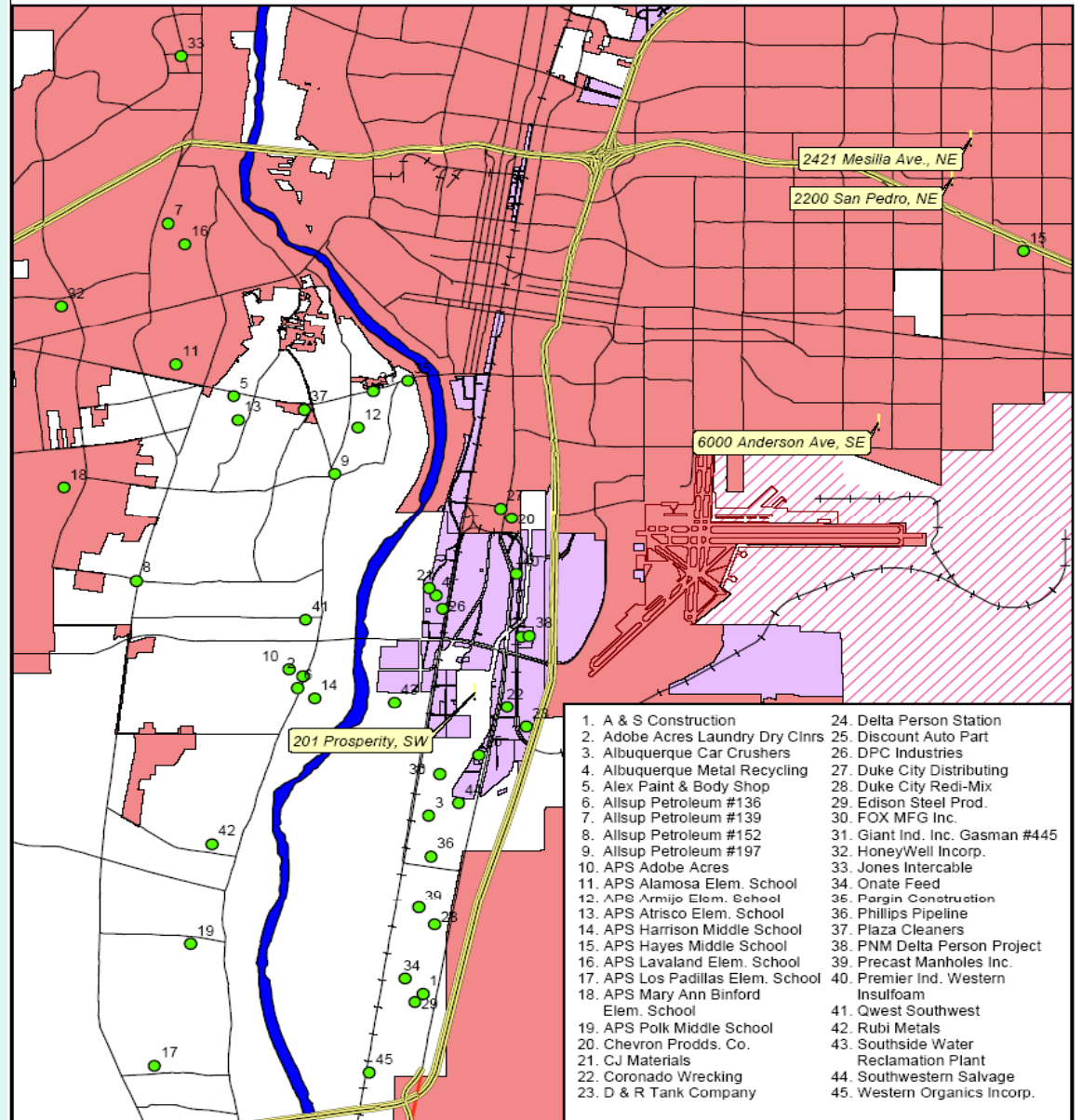


Why was the study done?

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



This information is for reference only. Bernalillo County assumes no liability for errors associated with the use of these data. Users are solely responsible for confirming data accuracy when necessary. Source data are from Bernalillo County, the City of Albuquerque and the Environmental Protection Agency.

Legend

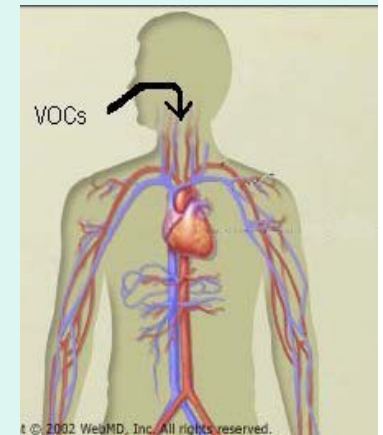
- ! Air Monitoring Stations
- EPA Air Release
- Albuquerque
- Kirtland AFB
- M-2 Zoning



What are volatile organic compounds (VOCs)?

Chemicals that

- evaporate easily and may be explosive
- have strong 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
- Industries
- 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 per person
 - 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 a personal visit
 - Pollutants were linked with house cleaning, dry-cleaning, gasoline pumping, and painting

How are amounts of pollutants determined to be safe or unsafe?

- Each pollutant amount was compared with Environmental Protection Agency (EPA) values.
- EPA values are used as a guide to see if more investigation is needed.

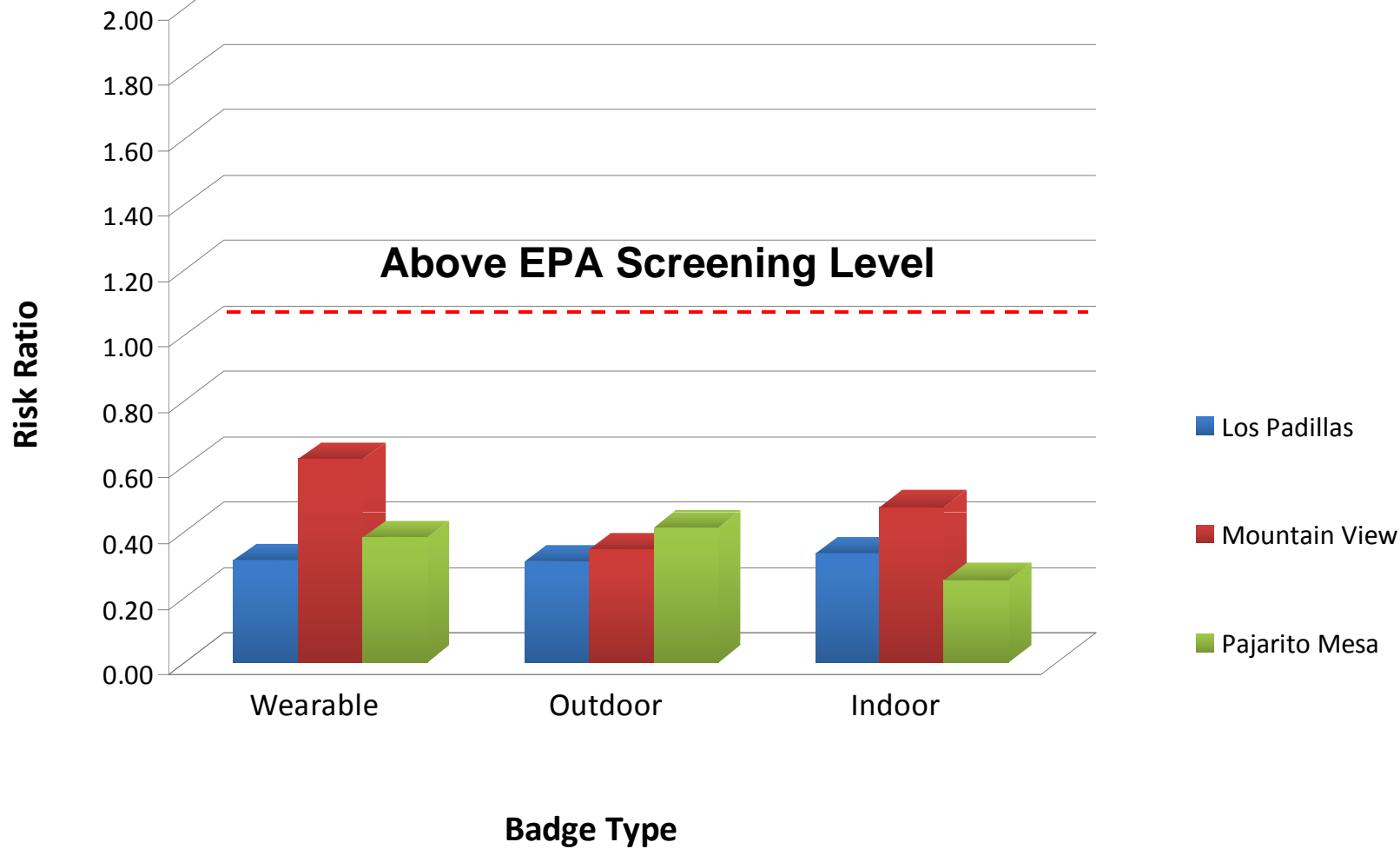
Illnesses other than cancer

- Pollutants are linked with illnesses that are non-cancerous.
 - Liver and kidney damage, central nervous system damage, and reproductive damage.
- If a chemical's concentration is greater than EPA's non-cancer screening level (for that chemical), it means that if you were exposed to this chemical on a daily basis for 30 years, you could expect to see non-cancer effects such as those listed above.

Were the pollutant amounts considered safe based on EPA's non-cancer screening levels?

- Probably safe, chemical concentration values were less than EPA's non-cancer screening levels.
- In general,
 - personal exposures were greater than indoor exposures
 - indoor exposures were greater than outdoor exposures

Cumulative Median Non-cancer Screening Risk Ratios



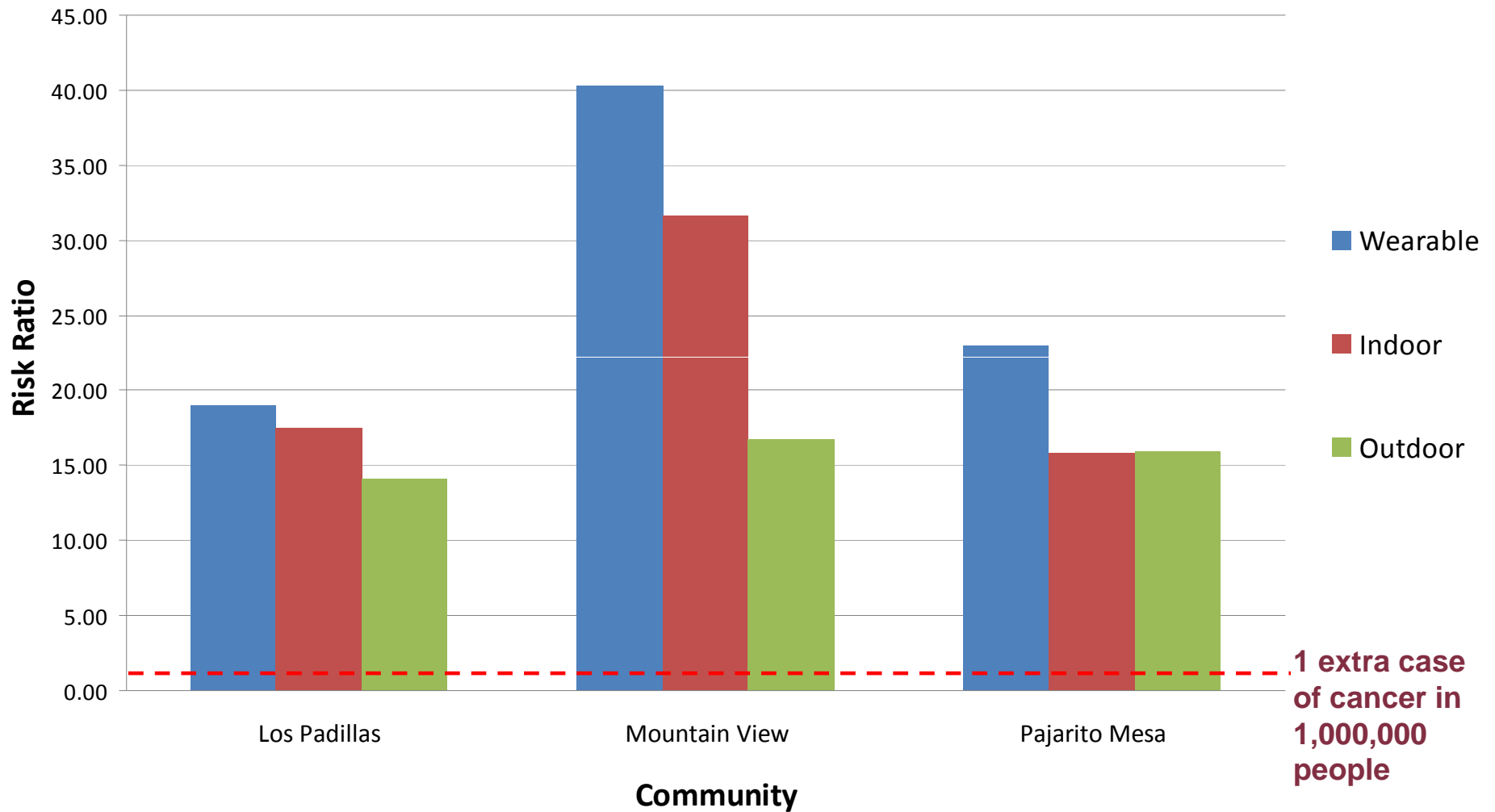
CANCER

- Some pollutants can cause cancer.
- If a chemical's concentration is greater than EPA's cancer screening level (for that chemical), it means that if 1,000,000 people were exposed to this chemical concentration on a daily basis for 70 years, you could expect 1 extra case of cancer.

Were the pollutant amounts considered safe based on EPA's cancer screening levels?

➤ Probably unsafe

Cumulative Median Cancer Risk Ratios



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

What pollutants exceeded EPA's cancer screening level?

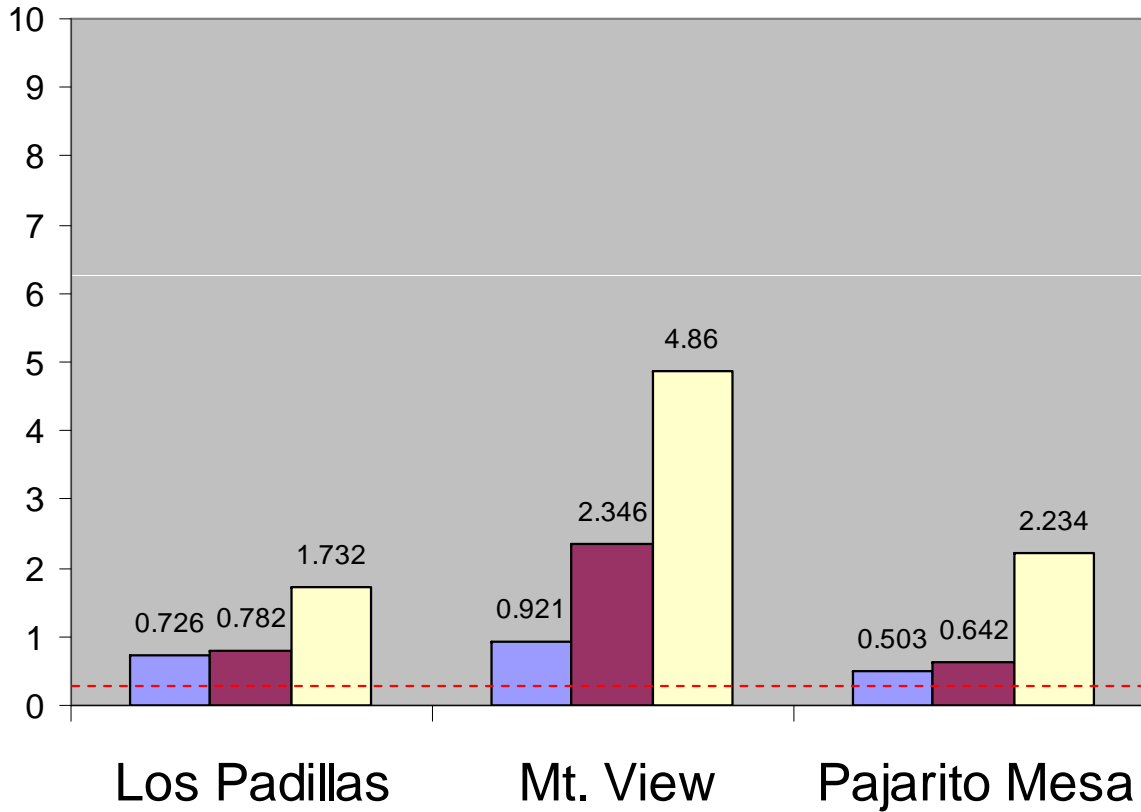
- 4 chemicals exceeded the EPA's cancer screening level:
 - Benzene,
 - Chloroform
 - Tetrachloroethylene
 - Carbon tetrachloride

Uses of pollutants that exceeded EPA's cancer screening levels

- 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
 - Used in the production of refrigeration fluid and propellants for aerosol cans, as a pesticide, as a cleaning fluid and degreasing agent, in fire extinguishers, and in spot removers. 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

Median Concentration Measured
(ug/m³)



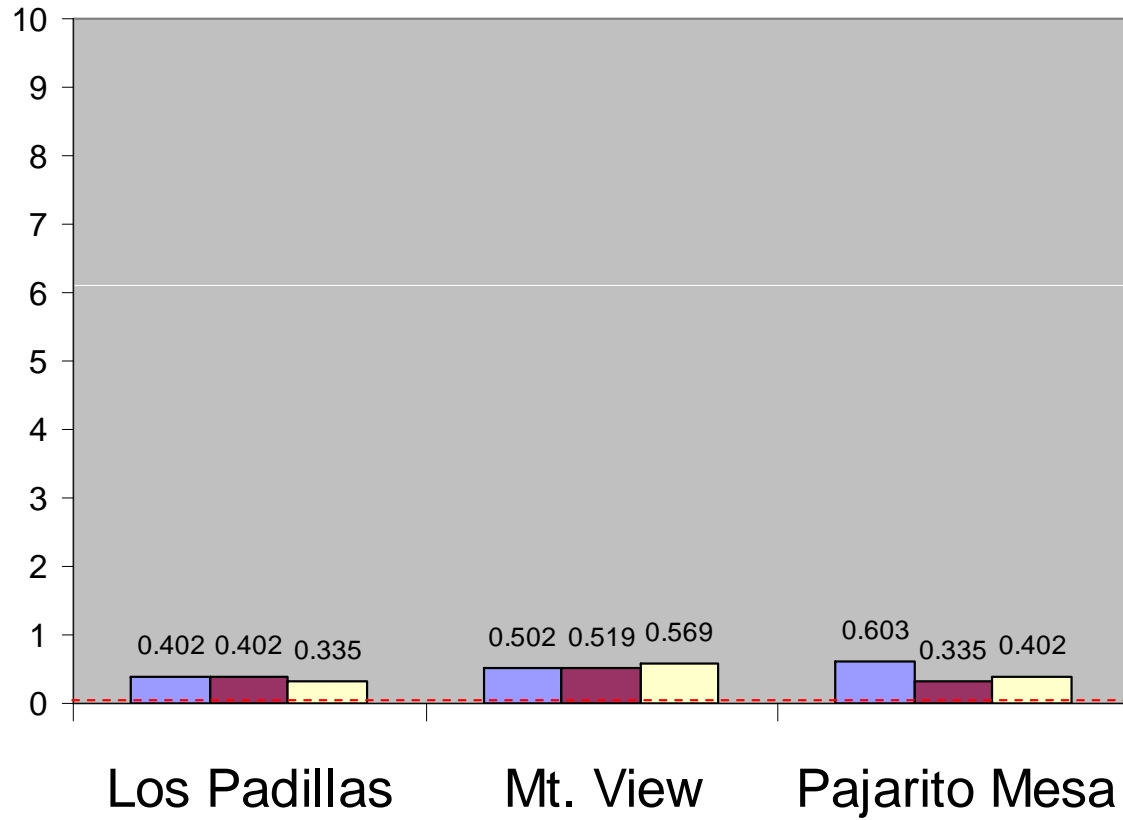
Legend:
■ outdoors - median
■ Indoors - median
■ Personal - median

Note:
Above red line shows greater than 1 excess cancer per 1 million

0.25

Carbon Tetrachloride

Median Concentration Measured
(ug/m³)



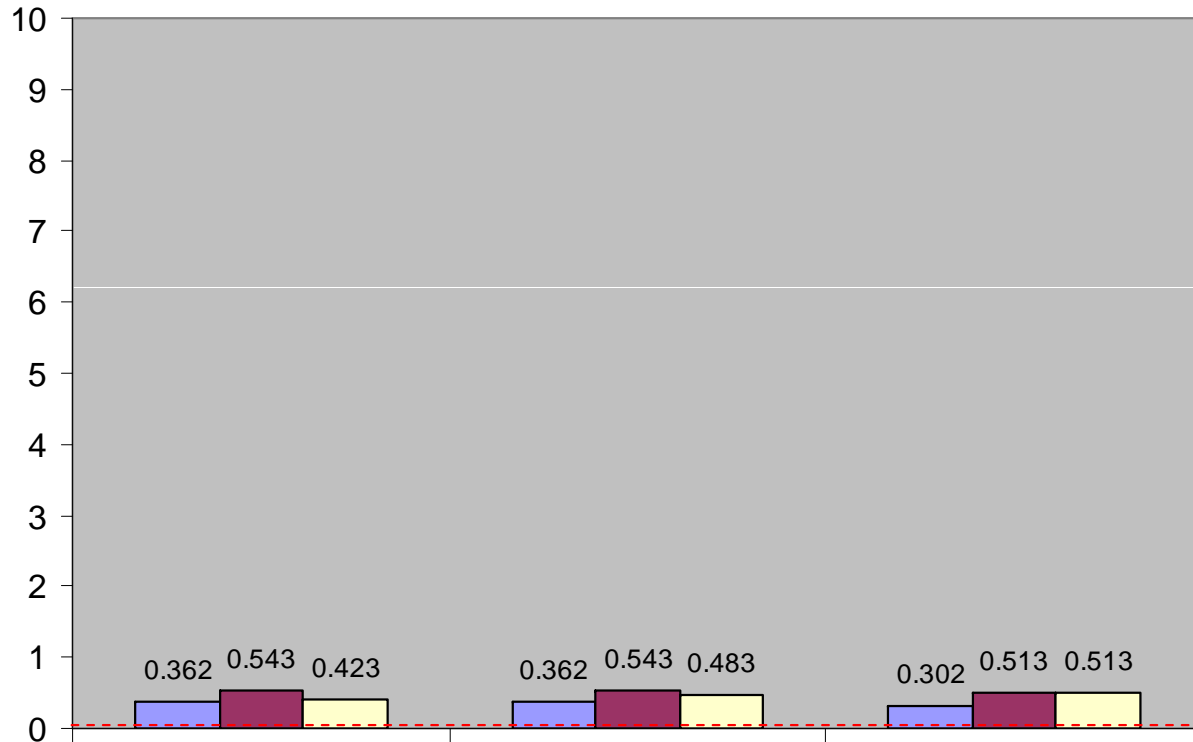
- outdoors - median
- Indoors - median
- Personal - median

Above red line shows
greater than 1 excess
cancer per 1 million
people

0.13

Chloroform

Median Concentration Measured
(ug/m³)



■ outdoors - median
■ Indoors - median
■ Personal - median

Above red line shows greater than 1 excess cancer per 1 million people

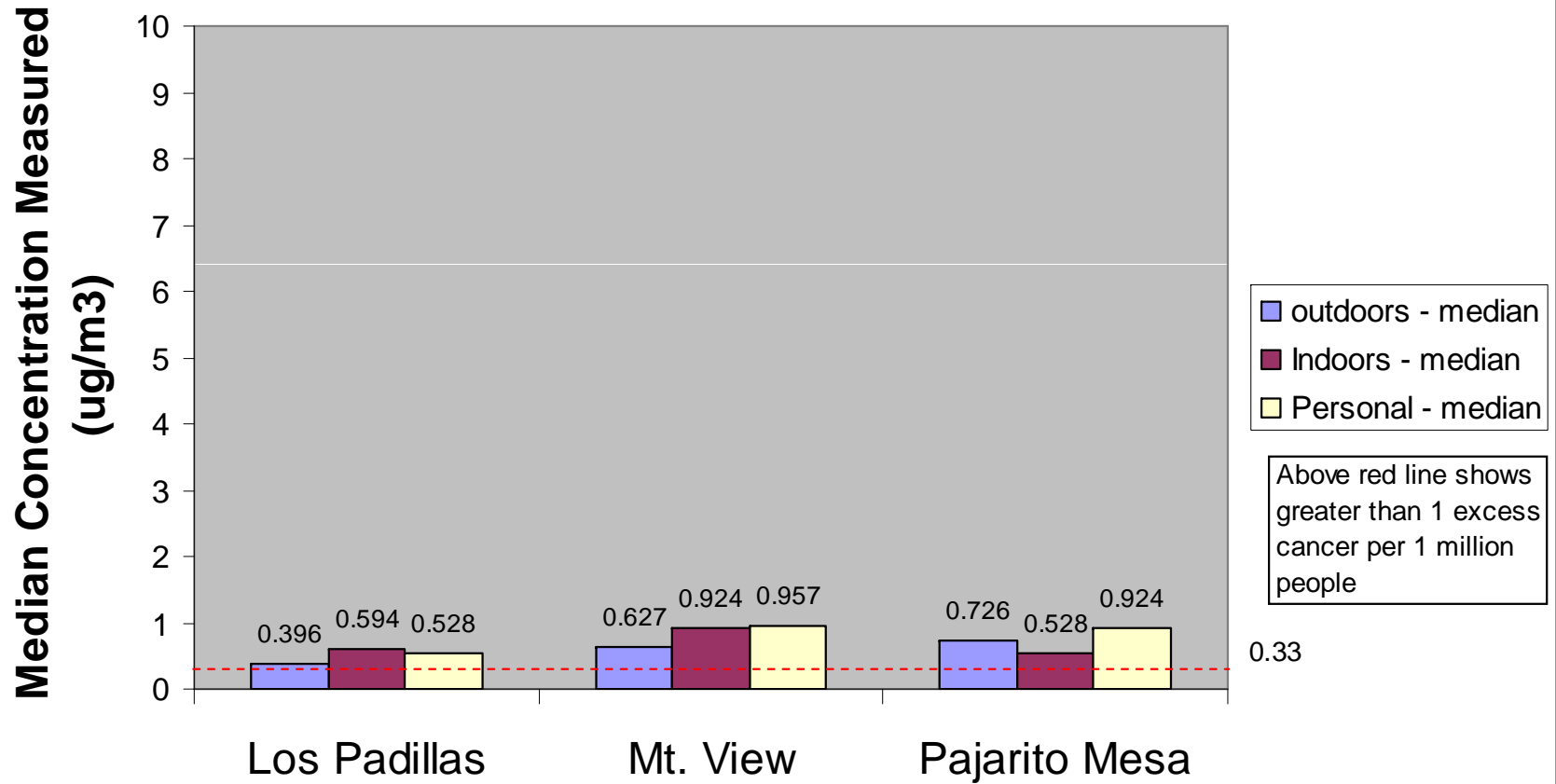
Los Padillas

Mt. View

Pajarito Mesa

0.084

Tetrachloroethylene



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

- **carbon tetrachloride**

- Do not purchase pesticides from other countries where carbon tetrachloride may not have been banned.



- **tetrachloroethylene**

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



What does it mean?

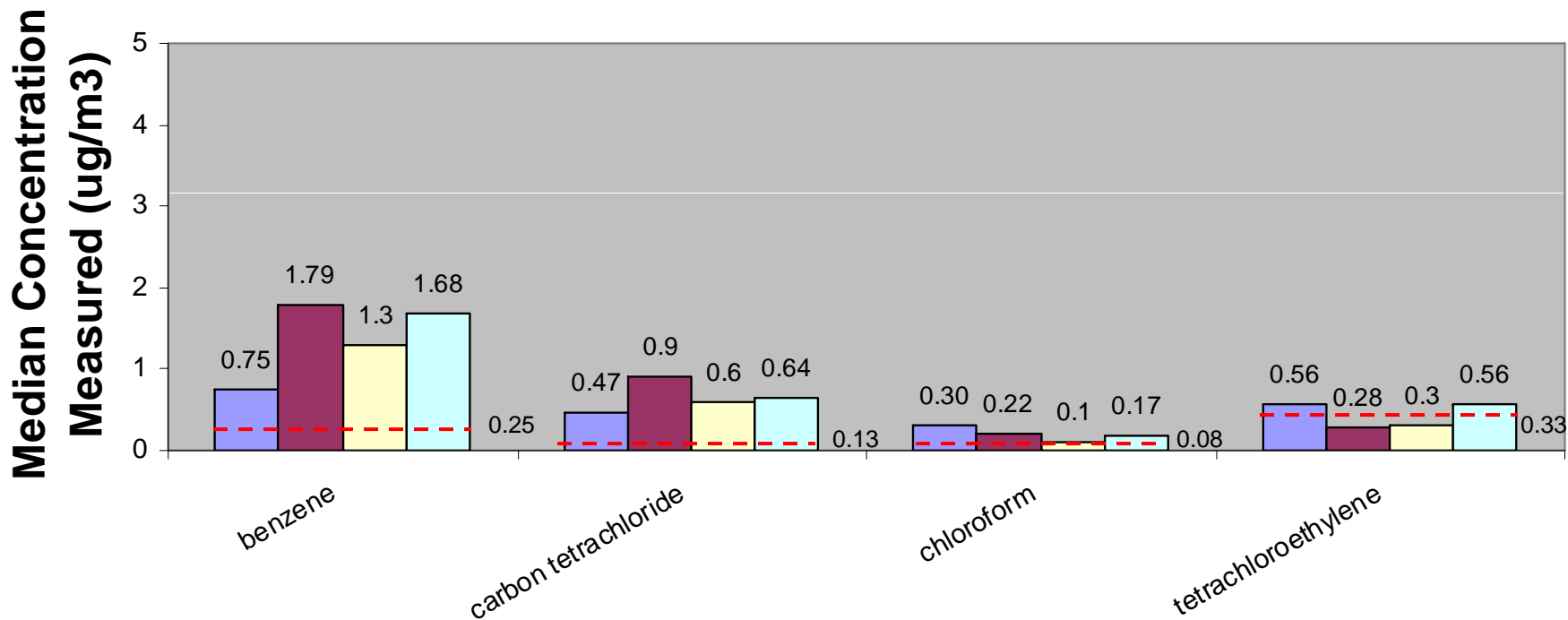
- We are concerned about:
 - Benzene
 - Carbon tetrachloride
 - Chloroform
 - Tetrachloroethylene
- These chemicals were problems in all three communities, although amounts differed
- In general
 - personal exposures were greater than indoor exposures
 - indoor exposures were greater than outdoor exposures

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



Outdoor Exposure Comparisons



South Valley study

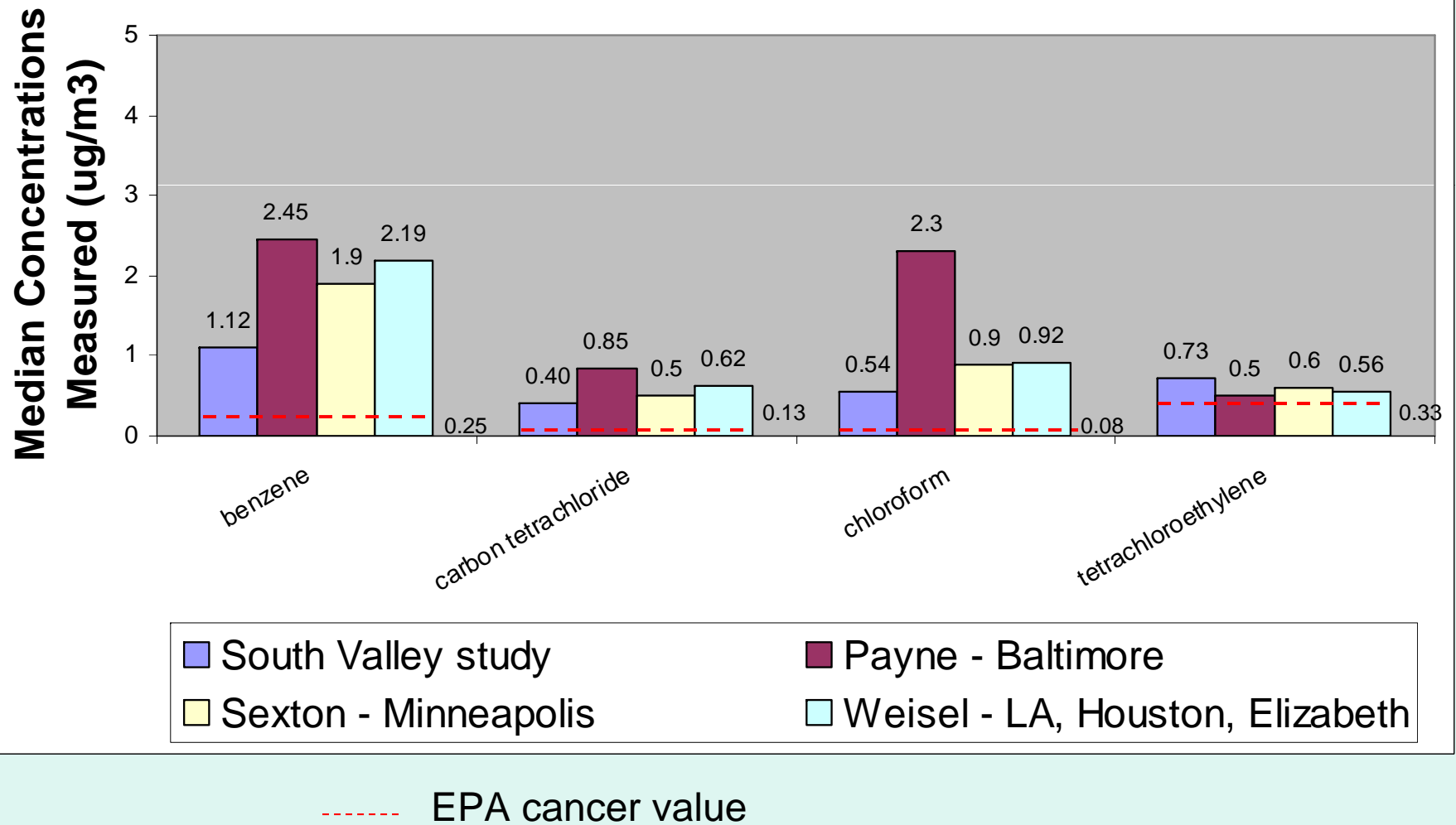
Payne - Baltimore

Sexton - Minneapolis

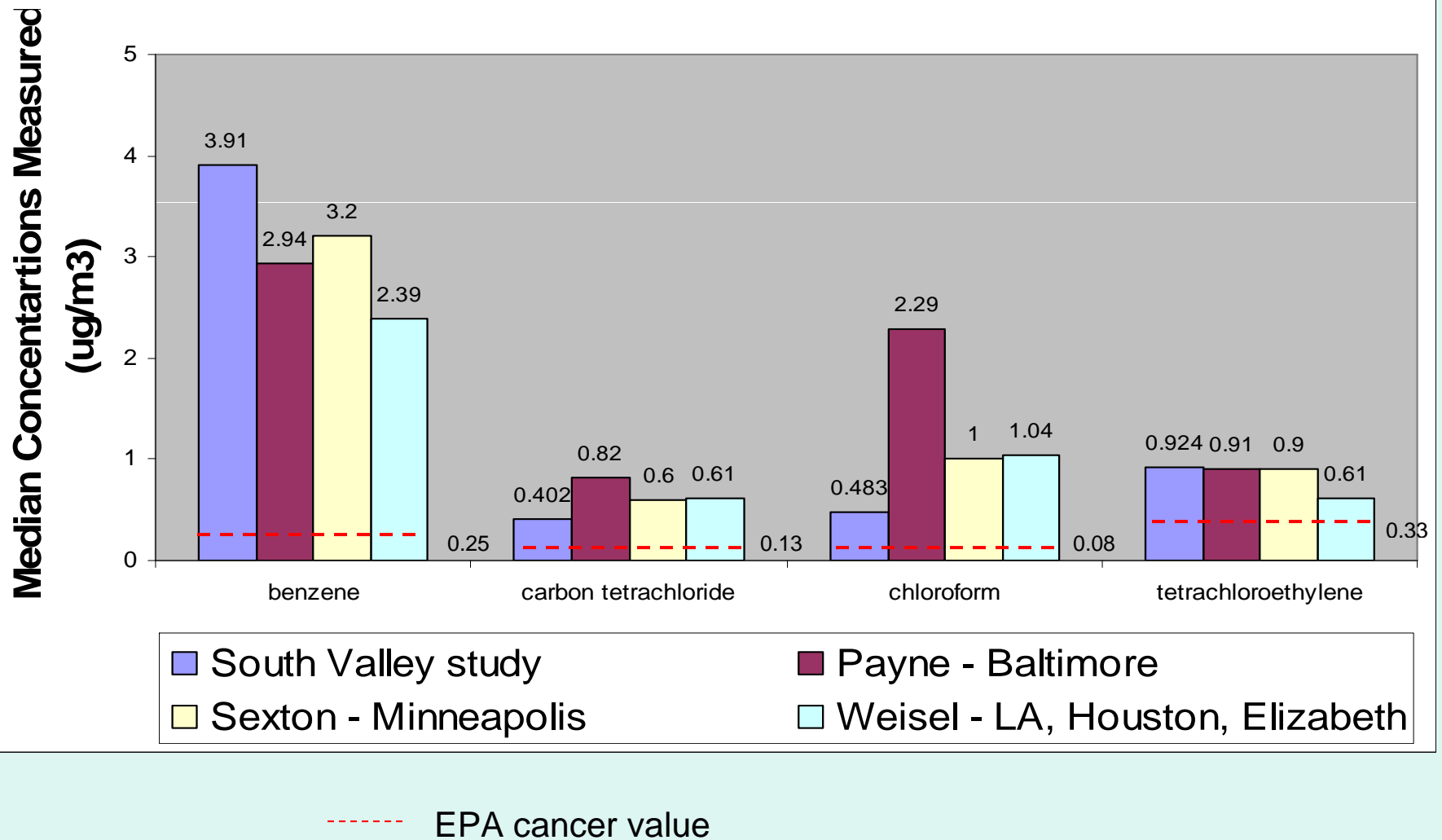
Weisel - LA, Houston, Elizabeth

----- EPA cancer value

Indoor Exposure Comparisons



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, particularly those associated with cigarette smoke, may contribute to lung cancer, leukemia, and bladder cancer; however factors other than exposure to VOCs could also cause these types of cancers.

Other considerations

- Short sampling period – 3 days
- Small sample size – 29 participants
- How does EPA calculate their non-cancer and cancer screening levels
- Did not consider pollutants from a particular industry, but rather community air pollutants
- VOCs can come from industrial emissions and from chemical use in the home

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 who 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

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Contact Information

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