Thirdhand Smoke Exposure in San Diego's **Outdoor Dining Patios**

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Our Goal

- Compare the levels of thirdhand smoke in outdoor dining patios with and without no-smoking policies.
- Investigate differences in exposure to thirdhand smoke in outdoor dining settings.

Background

- Tobacco smoke residue, or "thirdhand smoke," is the toxic chemical residue left behind long after smoking stops.
- Over 25 California Proposition 65 chemicals, known to cause cancer or reproductive harm, have been identified in thirdhand smoke.^{1,2}
- Patrons of outdoor restaurant patios can pick up and absorb the residue on their hands by touching tables and surfaces.
- San Diego is the largest city in San Diego County without a comprehensive smokefree outdoor dining policy.

Methods

Studies were conducted in San Diego with outdoor dining settings in 2023 and 2024.

2023 Study Methods

- Sampled 10 outdoor dining patios (5 smokefree, 5 with observed smoking) for tobacco smoke residue.
- Measured nicotine on students' hands before and after dining; collected table surface samples from each patio.

2024 Study Methods

- Called 300 restaurants in the City of San Diego to determine patio smoking and vaping policies and sampled 10 randomly selected outdoor dining patios (5 where we were told smoking was allowed, and 5 where we were not) for tobacco smoke residue.
- Compared nicotine levels on surfaces and volunteers' hands before and after dining; collected table surface samples from each patio.

Smokefree outdoor dining can lower patron exposure to thirdhand smoke...

2023 Study Methods

Students identified patios with and without observed smoking, then confirmed smoking status by phone.



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Selected 5 smokingallowed and 5 smokefree patios for sampling.

3

Students tested nicotine levels by wiping the surfaces of a table and the hands of a volunteer who ate a meal on the patio at each site.

After testing the hands of 10 volunteers who ate at smoking or nonsmoking restaurants...

13x more nicotine

was found on the hands of volunteers who ate a meal in patio known to regularly allow smoking.

Tables tested at outdoor dining patios known to regularly allow smoking had



...but voluntary policies are not enough to protect San Diegans.

2024 Study Methods



"If I came for dinner later today, is it ok if I smoke on your patio? What about vaping? Is it okay if I vape on your patio?"



Researchers randomly selected 5 restaurants who said **YES**, and 5 who said **NO**.



Researchers tested nicotine levels by wiping the surfaces of a table and the hands of a volunteer who ate a meal on the patio at each site.



concern* on tables.







*"Levels of concern" refers to detectable levels of nicotine above background levels expected to be found in a non-smoking environment.

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14x more nicotine

than tables at restaurants with smokefree dining patios.





60% of restaurants who said **YES** to smoking had nicotine levels of concern* on tables.

20% more of the restaurants that allowed smoking had nicotine at levels of concern.

Scan the QR code to read or download the poster.



Results

2023 Study

In 2023, compared to smokefree outdoor dining settings, San Diego restaurants that were observed to allow smoking had, on average:

2024 Study

In 2024, in a sample of San Diego restaurants that self-reported their smoking-related policies:

- on their hands.

Conclusion

- compliance.

References



• 14x higher levels of nicotine on their tables. • 13x higher levels of nicotine on volunteers' hands after they ate a meal on the patio.

 100% of tables had detectable levels of nicotine. • 60% of tables at restaurants that reported allowing smoking had nicotine at levels of concern*

compared to **40% of tables** in smokefree patios. • 90% of volunteers had detectable levels of nicotine

 The average level of nicotine on all volunteers' hands after eating was **56x higher** than it was before eating a meal.

 Outdoor dining settings where smoking was observed had significantly higher tobacco residue levels on table surfaces, exposing patrons and workers to chemical residue.

• Patron and worker exposure is higher where smoking is allowed; while nearly all volunteers had some level of nicotine on their hands after eating a meal, some levels were as high as those seen in homes with active indoor smoking.

• Patrons and workers absorb nicotine and carcinogens from patio surfaces, even at restaurants with smokefree intentions. Voluntary policies offer limited protection.

 A citywide smokefree policy with education and enforcement could improve public health and

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Policy Research Center for Tobacco and the Environment

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- Assessment. https://oehha.ca.gov/proposition-65/proposition-65-list

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